# PIT AND QUARRY

MARCH 1953

## In this Issue . . .

Convention Reports of National Crushed Stone and National Concrete Masonry Associations . . . Asphalt Processing at Wyoming . . . Aluminum Company of Canada Builds Big Earth-Fill Dam for Power Project . . . Job Training for Safety

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View of the Cleveland Industries Exposition, Cleveland Public Auditorium. (See Page 210)

FOR DEPENDABLE HEAVY-DUTY SHIPPING SACKS...

# there is no substitute for kraft!

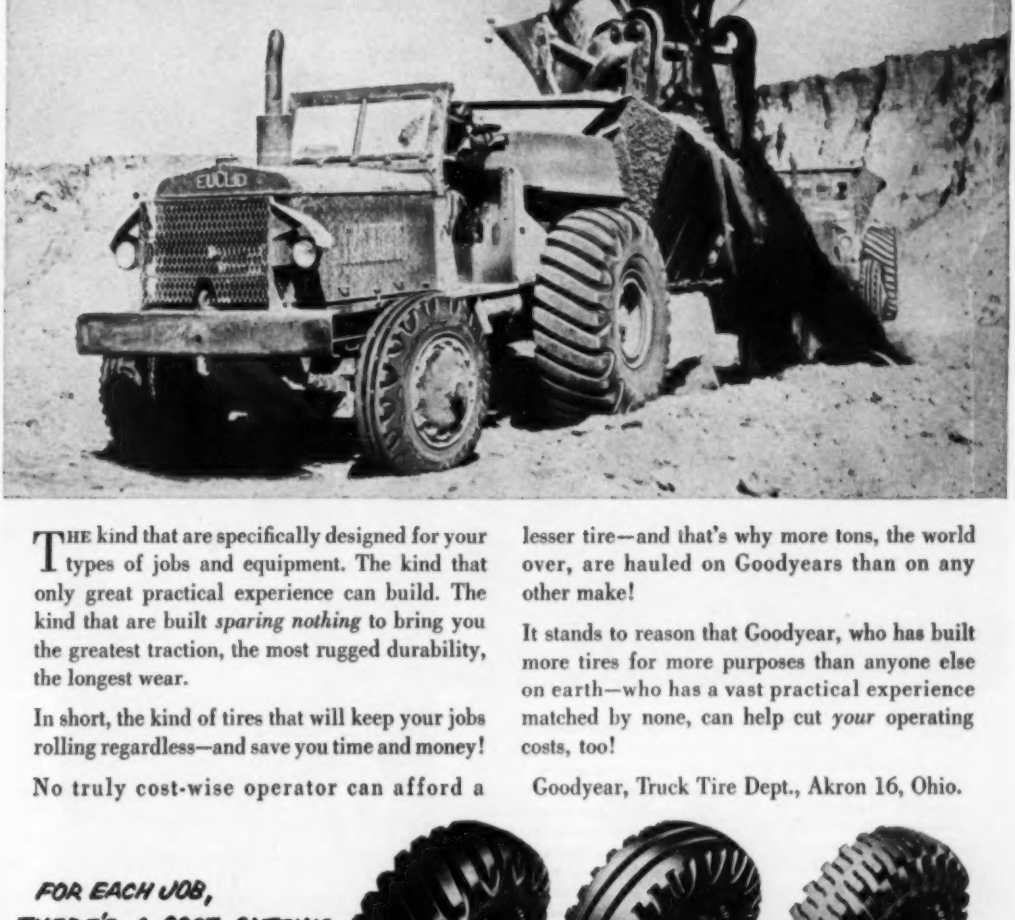
**KRAFT BAG CORPORATION**

GILMAN PAPER COMPANY SUBSIDIARY
630 Fifth Avenue, New York 20, N.Y.
Daily News Bldg., Chicago 6, Ill.
Plants at Gilman, Vt. & St. Marys, Ga.

Gilman PAPER CO.
• St. Marys Kraft Corp.
• Gummed Tape Div.
• The Gilbound Corp.
• Kraft Bag Corp.

*If your product fits into a bag—we'll make the bag to fit your product*

# What kind of tires can your jobs afford ?




THE kind that are specifically designed for your types of jobs and equipment. The kind that only great practical experience can build. The kind that are built *sparing nothing* to bring you the greatest traction, the most rugged durability, the longest wear.

In short, the kind of tires that will keep your jobs rolling regardless—and save you time and money!

No truly cost-wise operator can afford a lesser tire—and that's why more tons, the world over, are hauled on Goodyears than on any other make!

It stands to reason that Goodyear, who has built more tires for more purposes than anyone else on earth—who has a vast practical experience matched by none, can help cut *your* operating costs, too!

Goodyear, Truck Tire Dept., Akron 16, Ohio.

*FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!*

HARD ROCK LUG
For traction and toughness on fire-killing work.
HARD ROCK RIB
front-wheel work-mate to the Hard Rock Lug.
ROAD LUG
Best on-and-off roader. Runs smoother, cooler on highway — takes the rap in the rough!

Road Lug—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

# GOODYEAR

*We think you'll like "THE GREATEST STORY EVER TOLD" — every Sunday — ABC Radio Network — THE GOODYEAR TELEVISION PLAYHOUSE — every other Sunday — NBC TV Network*


PIT AND QUARRY, March, 1953, Vol. 45, No. 9. Published monthly by the Complete Service Publishing Company, 431 South Dearborn Street, Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second class matter February 28, 1922, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

. . . and

HERE'S THE COMPRESSOR THAT CARRIED THE BRUNT OF THE DRILLING JOB!

**QUOTE:**

"The Schramm 315 c.f.m. Diesel Engine Driven Compressor illustrated is being used by the Racquette River Construction Corporation, Potsdam, N. Y., on the Niagara Mohawk Power Corporation job at Carry Falls.

For the past year, this compressor has carried the brunt of our drilling for rock excavation, pressure grout holes, and rock rip rap quarrying. We ordinarily use four individual hammers drilling two feet to six feet holes and occasionally have out as much as eight hundred feet of ¾" hose, in the aggregate. For the grout holes and rip rap, we use the machine to operate two 50 pound wagon-mounted hammers drilling twenty feet holes.

When not employed as mentioned above, we use the compressor for such other jobs as cleaning concrete surfaces with air, pumping water (with an air mop) and pressure grouting."

Cordially yours,
RACQUETTE RIVER CONSTRUCTION CORP.
Frederick Rexford,
*Superintendent*

*Write today for Bulletin 5101A*

**SCHRAMM, INC.**
*The Compressor People*
WEST CHESTER • PENNSYLVANIA

**SCHRAMM AIR COMPRESSORS**

*A SIZE AND MODEL FOR EVERY AIR NEED*

# FLEXIBILITY
## with side-dumps only!

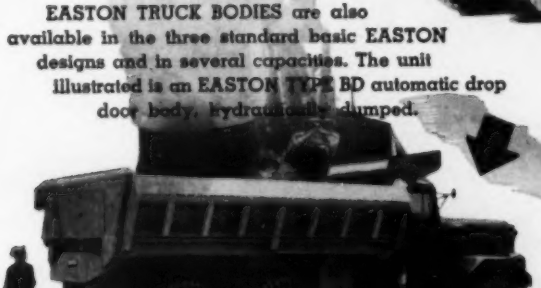
WITH EASTON SIDE-DUMP FLEXIBILITY you can change quickly from a single dump truck to a large capacity truck-and-trailer combination — or from a single trailer to either a truck-and-trailer or a double-trailer combination. This flexibility, *possible only with side-dump equipment*, provides for rapid, low-cost conversion to meet changing job-to-job requirements, increased production requirements, or newly developed job conditions. You make your best plans now *and for the future* when you start hauling with EASTON SIDE-DUMPS.

## as a TRAILER

EASTON TRAILERS are built in all three of EASTON's basic side-dump designs — doorless pan, lift door and drop door. The unit illustrated is an EASTON TYPE TD automatic drop door trailer, hydraulically dumped.

## as a TRUCK BODY

EASTON TRUCK BODIES are also available in the three standard basic EASTON designs and in several capacities. The unit illustrated is an EASTON TYPE BD automatic drop door body, hydraulically dumped.



## as a COMBINATION

EASTON SIDE-DUMPS, of any type, may be joined in truck-and-trailer or double-trailer combinations to be used as single units or in combination, as required. The unit illustrated is an EASTON TYPE TD double-trailer combination, hydraulically dumped. Overall capacity, 45 tons.

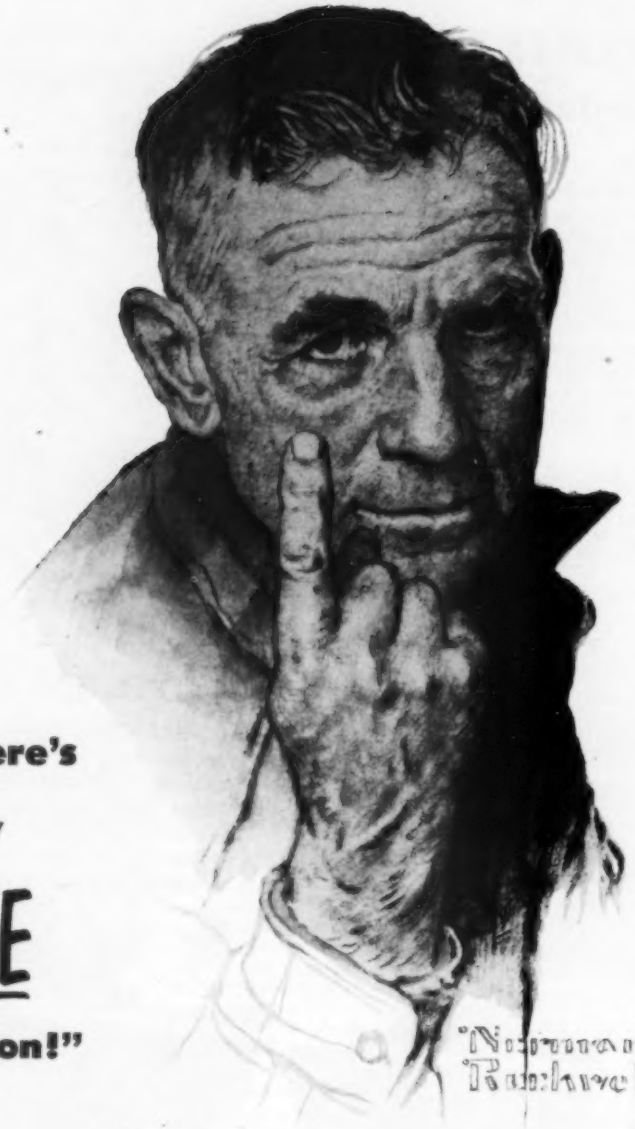
D-1099

INVESTIGATE **EASTON** SIDE-DUMP FLEXIBILITY!

**EASTON**

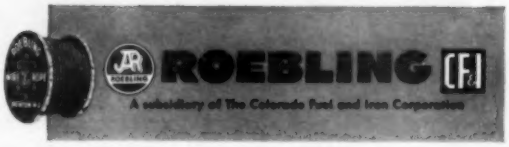
Conversion equipment may be supplied for units now in service, as well as on new orders. Consult EASTON for a qualified engineering recommendation. Write today . . .

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.



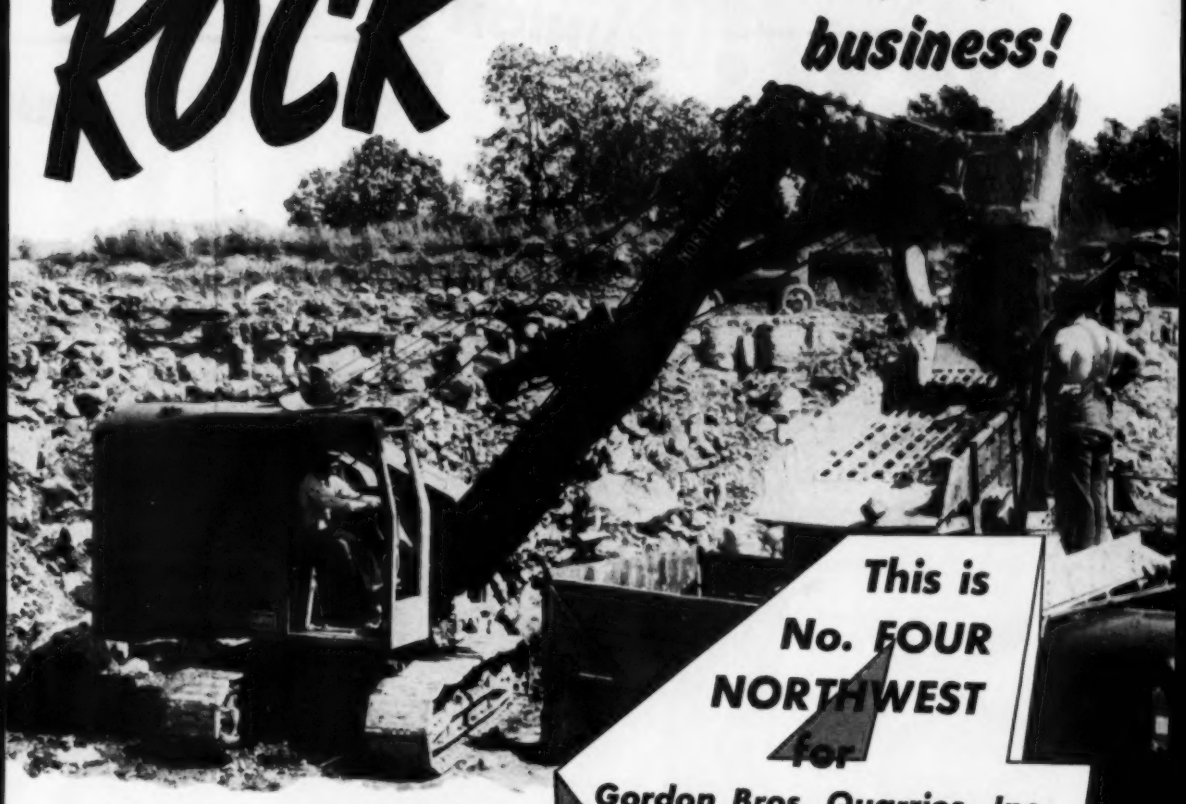

IT'S JUST THAT SIMPLE. There's only one reason in the world why 2 out of 3 wire rope users in the quarries prefer Roebling wire rope... *it costs a lot less on the job than any other.*

For maximum wire rope efficiency and economy, call your nearest Roebling office for a Field Man. He'll recommend the best ropes for your requirements.




JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13235 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5240 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1930 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

# ROCK is this company's business!



**This is No. FOUR NORTHWEST for Gordon Bros. Quarries, Inc. Forest City, Mo.**

—and the rock plant is the company's factory. Any situation like that needs dependability on the "feeding" end and that is why a new Northwest 3/4 yd. shovel is there in the pit.

This is the fourth Northwest that Gordon Bros. Quarries, Inc., has owned so they knew they were getting dependability when they installed it. They have proved Northwests in their own rock so to speak.

Northwest advantages are worth having and it pays to bank on the successful experience of others. Why not plan on a Northwest? Learn about them now and talk it over with a Northwest man.

**NORTHWEST ENGINEERING COMPANY**
135 South LaSalle Street, Chicago 3, Illinois

# NORTHWEST

**SHOVELS • CRANES • DRAGLINES • PULLSHOVELS**

*Convertible for any Mining Material Handling or Excavation Problem*

# NEW!

for IMPROVED STACKING, PALLETIZING and MATERIAL HANDLING

# UNION'S NON-

**ECONOMICAL**
The most economical bag with a built-in NON-SKID.

**MORE PROTECTION**
Curtails breakage due to bags falling from fork trucks and stacks.

**LABOR SAVINGS**
Fewer man-hours needed to clean up contents of broken units; easier handling.

**MOVE FREELY**
Manufactured to flow on chutes and conveyors.

**ADAPTABLE**
Special coating is controllable. Like all Multiwalls, it is custom-engineered for each use.

**TRANSPARENT**
Coating shows inks and stock to full advantage.

**EASY TO SEW**
Tops of bags may be kept free of coating.

**SHIP BETTER**
Resist rough handling. Less tendency to slide and chafe in transit.

**WON'T ADHERE**
Bags will not stick to each other in bundles.

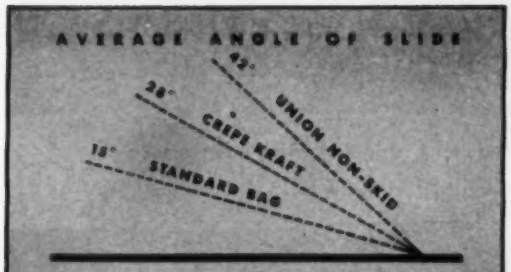
**UNIFORM STACKING**
No variation. Provides completely dependable stacking qualities.

**PLEASES YOUR CUSTOMERS**
Reduces likelihood of transit damage due to load shifts; cuts down complaints.

**LESS REPROCESSING**
Less breakage and spilling means less rehandling of product.

# -SKID MULTIWALL BAGS

**Sprayed-on coating reduces skidding effectively**




**Union's *NON-SKID* holds firm at three times the angle.** In standard laboratory tests to determine non-skid characteristics, scales connected to tilt tables measure the degree of angle required to make bags slide off. Union's new NON-SKID bag has a minimum slide angle of 42°, far superior to any other bag.

**Union's brand-new**
*NON-SKID* Multiwall Bag
guarantees better performance at
every stage of your
packaging, storage and shipping operations
where skid control is essential.

Union's *NON-SKID* is a
performance-proved Multiwall
with the addition of
an exclusively developed resin-like emulsion.
Almost invisible to the eye,
this new spray makes this the first
*all-way NON-SKID* Multiwall.

This new bag delivers a far greater *non-skid* rating in every direction . . . even greater than bags made of creped kraft.

**Size — Stock — Delivery**

Available in Union Multiwalls of all sizes with either a kraft or bleached outer ply. Initial capacity may be limited. Orders will receive priority in order of receipt. Investigate now.

**BEST APPLICATIONS**

Union's *NON-SKID* is particularly recommended for feed, chemicals, flour, synthetic rubber, starch, fertilizer, insulating materials, and other products in whose packaging material handling is an important consideration.

**DRIVER COULDN'T MAKE *NON-SKID* BAGS SLIP OFF!**

In one plant test, a gasoline-powered truck was loaded with these bags. The driver was instructed to make them slip off. He started forward at full speed, then applied brakes full force. Although momentarily the truck itself threatened to tip over, the stack of NON-SKID Multiwalls resting on the forks merely leaned slightly, then settled back to their original position.

**SEE FOR YOURSELF**

**UNION BAG & PAPER CORPORATION**
**Woolworth Bldg., N.Y.C. 7**

**We would like more information on the new Union NON-SKID Multiwall Bag.**

Name_____ Title_____

Company_____

Street_____

City_____ Zone____ State_____

PQ 353

**UNION BAG**
**& PAPER CORPORATION**
Woolworth Building, New York 7, N. Y.

# "QUICK-WAY"

Reg. U.S. Pat. Off.

## Speeds Output Increases Profits for PIT AND QUARRY OPERATORS

**Whether its moving shot rock, sand, or crushed stone, stripping overburden or charging bins, you'll find the "QUICK-WAY" in a class by itself in the ¼ to ½ yard field.**

The "QUICK-WAY" features low center of gravity, works easily over the side, has proper balance for truck operation, gives you easy, fast swinging, plenty of reserve power, rugged all steel construction, numerous parts interchangeable. 4 models, ¼ to ½ cubic yard shovel, clamshell, dragline, backhoe, 3 to 10 ton crane capacity. Truck speeds to and from jobs. Low initial cost. Low maintenance costs. Eight different attachments.

With a "QUICK-WAY" you'll roll up yardage records hour after hour, day after day. Ask your distributor for a free demonstration or mail coupon.

*"QUICK-WAY" Model E dragline with 30' boom loading gravel*

*"QUICK-WAY" truck shovel, loading sand*

*"QUICK-WAY" crane with skull cracker attachment eliminates secondary shooting*

*Clinker is handled from the pit to the storage pile and from the storage pile to grinding circuit with a mobile "QUICK-WAY" crane*

**"QUICK-WAY"**
**TRUCK SHOVEL CO.**
Denver, Colorado, U.S.A.

**MAIL COUPON TODAY**

**"QUICK-WAY" TRUCK SHOVEL CO.**
Dept. 121 • 2401 East 40th Ave. • Denver 1, Colorado

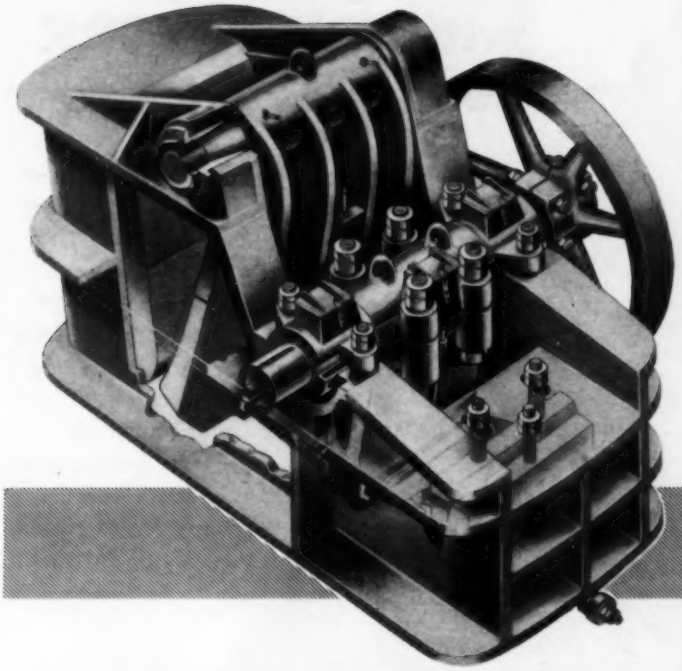
Please send me complete details on "QUICK-WAY" Truck Shovels —four different models from 3 to 10 ton crane capacity.

*Name* _____

*Address* _____

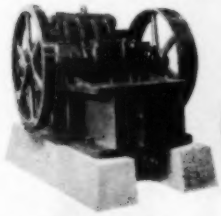
*City* _____ *State* _____

# this "bottleneck" boosts production!



*The production capacity of a quarry depends upon the output of the crusher. Poor crusher performance creates a "bottleneck". One sure way to relieve this "bottleneck" is to employ crushers built for greater efficiency and dependability in operation. Traylor Jaw Crushers use their curved crushing surfaces to ease the squeeze on your production bottleneck.*

**Get more production . . . cut down time . . . with curved jaw plates.** Primary reason for the steady production of Traylor Jaw Crushers is their original curved jaw plates. These surfaces outwear conventional plates by as much as 3 to 1 because of the scientific application of crushing power. Also, with Traylor's curved jaw plates, a finer product in greater capacity is secured, at no increase in power. IN FACT, TRAYLOR CRUSHERS REQUIRE LESS POWER PER TON OF ROCK CRUSHED THAN ANY OTHER JAW CRUSHER.



A **Traylor** LEADS TO GREATER PROFITS

## TYPE H AND HB

Traylor Type H and HB Crushers offer capacities ranging from 4 to 210 tons per hour (Type H) and from 120 to 640 tons per hour (Type HB). Bulletin 4105 gives complete specifications and details on all the features of both the H and HB Jaw Crushers. Send this coupon for your copy today.

**TRAYLOR ENGINEERING & MFG. CO.**
**556 Mill St., Allentown, Pa.**
Sales Offices: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

**Send complete information on H and HB Jaw Crushers immediately.**

Name: _____
Position: _____
Company: _____
Address: _____ State: _____

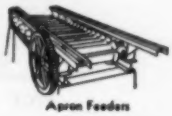
Primary Gyratory Crushers

Rotary Kilns

Secondary Gyratory Crushers

Ball Mills

Jaw Crushers


Apron Feeders

tiny to
giant-sized bearings

# with TEAM-WORK built-in every size

With every size in SKF's wide range of ball and roller bearings, you receive an extra quality – – *teamwork*. This is the ability of SKF field and home office Engineers, and SKF Distributors, to cooperate productively with you in putting the right bearing in the right place.

Result – – your equipment will improve in performance.

When it's a question of bearing *replacement*, call your SKF Distributor.

SKF
BALL AND ROLLER BEARINGS

7980-A

SKF INDUSTRIES, INC., PHILA. 32, PA. – *manufacturers of* SKF *and* HESS-BRIGHT *bearings.*

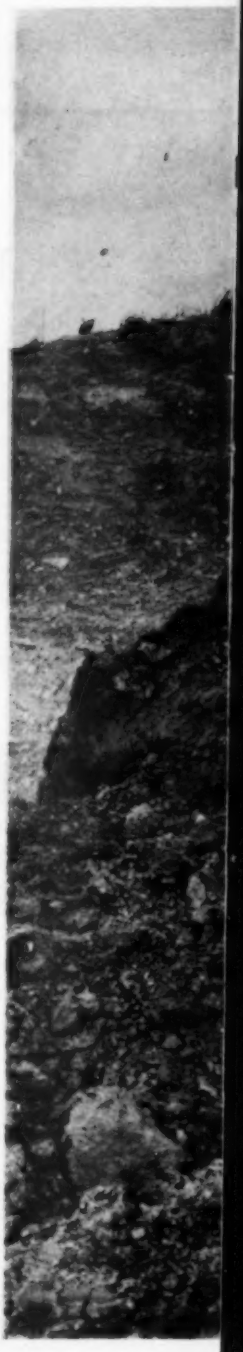
# whys ?

It's wise to know why one line of lubricants will outperform another. Mining men throughout the country have asked and found out why the complete line of Cities Service Lubricants is the wisest choice in terms of dollars and output. Why not talk to one of our Cities Service Lubrication Engineers yourself? Or write Cities Service Oil Company, Dept. C15, Sixty Wall Tower, New York City 5, New York.

**CITIES SERVICE**

**QUALITY PETROLEUM PRODUCTS**

# WE say the Allis-Chalmers HD-20 is designed to **OUTPRODUCE,** built to **OUTLAST**



**But anyone can make claims . . . That's why we invite you to get the facts firsthand from HD-20 owners. Just call your nearby Allis-Chalmers dealer. He'll be glad to tell you where you can see these great tractors at work . . . where you can talk to the men who own or operate them. When you do, experience tells us you'll hear about these big benefits:**

**Hydraulic torque converter drive** gives the operator the equivalent of hundreds of gear ratios in two speed ranges — automatically selects the proper speed for maximum production. With hydraulic torque converter drive, you take full advantage of available horsepower . . . even at creeping speed. And cushioned protection means fewer repairs . . . longer life of tractor and auxiliary equipment.

In dozing, pushing or shovel work, there's nothing like the HD-20 for sheer productive power. Torque converter actually multiplies torque up to four and one-half times . . . develops tremendous drawbar pull to start the load smoothly, and automatically accelerates to highest speed conditions permit, in either high or low range.

**New design, new performance.** The HD-20 is built to take it— with such design advantages as all-steel welded construction . . . balanced weight and power . . . extra heavy main frame. Hydraulic control permits steering this 20-ton giant with only the touch of a finger.

**Easy to service, easy to maintain.** 1,000-hour lubrication intervals for truck wheels, idlers, support rollers; no lubrication fittings under tractor. Major units are easily removed without disturbing adjacent parts; adjustments are simple.

***See for yourself the many profit-making applications of the HD-20. Ask your Allis-Chalmers dealer to show you this outstanding tractor at work.***

**ALLIS-CHALMERS**
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

41,000 POUNDS
175 NET ENGINE HORSEPOWER
GM 2-CYCLE DIESEL ENGINE

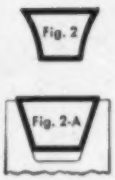
# WHY
# Gates V-Belts Wear Longer-

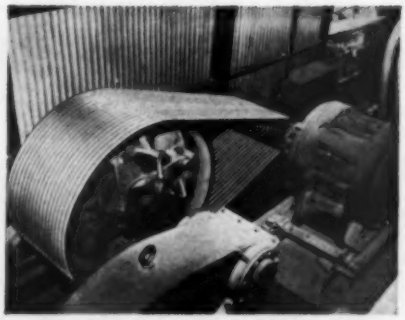
## The CONCAVE SIDE (U.S. Patent No. 1813698) is what gives the Extra Wear!

Take any *straight-sided* V-Belt (Fig. 1) and bend it as it bends in going around its pulley. You will clearly see its sides *bulge out* (Fig. 1-A). These sides therefore press *unevenly* against the V-pulley and this causes extra wear at the point shown by arrows (Fig. 1-A).

**Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2).**

You will see the precisely engineered CONCAVE SIDES fill out to an exact fit in the sheave-groove (Fig. 2-A). The sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the *full width* of the Gates Vulco Rope—and this means longer belt *life* and *lower* belt *costs* for you.



Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES—the Gates Vulco Rope!

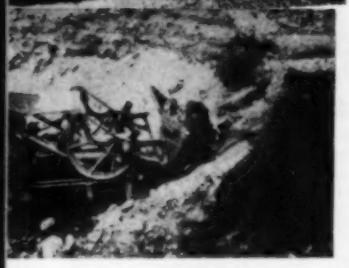
Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

CS-532

V-Belts — Hose
Molded Rubber Goods
for Industry
World's Largest Maker
of V-Belts

Gates® VULCO ROPE DRIVES

THE GATES RUBBER COMPANY • DENVER, U.S.A.



# Eimco's Work Faster! Keep Job Costs Lower

**Contractors, on all types of jobs, know that Eimco's will consistently save them money as an all around tool on general maintenance jobs, special repair jobs or new construction.**

**Take a job of loading sand or gravel. Eimco's will load from 4 to 6 yards per minute, and keep it up. This is a loading speed that invites comparison with heavier, more expensive equipment.**

**Eimco's are also good at digging unbroken ground for new roads, soil-silt deposits in riverbeds, taking up highway curb or shoulders, loading snow, clearing winter sluff, digging out frost blisters or digging ditches culverts or the toughest kind of rock loading.**

**Write for complete information on Eimcos stating your type of loading problem.**

*You Can't beat an Eimco*

EIMCO

1417

THE EIMCO CORPORATION

*The World's Largest Manufacturers of Underground Rock Loading Machines*

EXECUTIVE OFFICES AND FACTORIES . . . SALT LAKE CITY 10, UTAH, U. S. A.

*BRANCH SALES AND SERVICE OFFICES*

NEW YORK, 51 E. 42 STREET . . . CHICAGO, 5719 SOUTH WALLACE STREET

BIRMINGHAM, ALA., 3140 FAYETTE AVE. . . . DULUTH, MINN., 216 E. SUPERIOR ST.

EL PASO, TEXAS, MILLS BUILDING . . . BERKELEY, CALIF., 637 CEDAR STREET

KELLOGG, IDAHO, 307 DIVISION ST. . . . LONDON W. 1, ENGLAND, 190 PICCADILLY

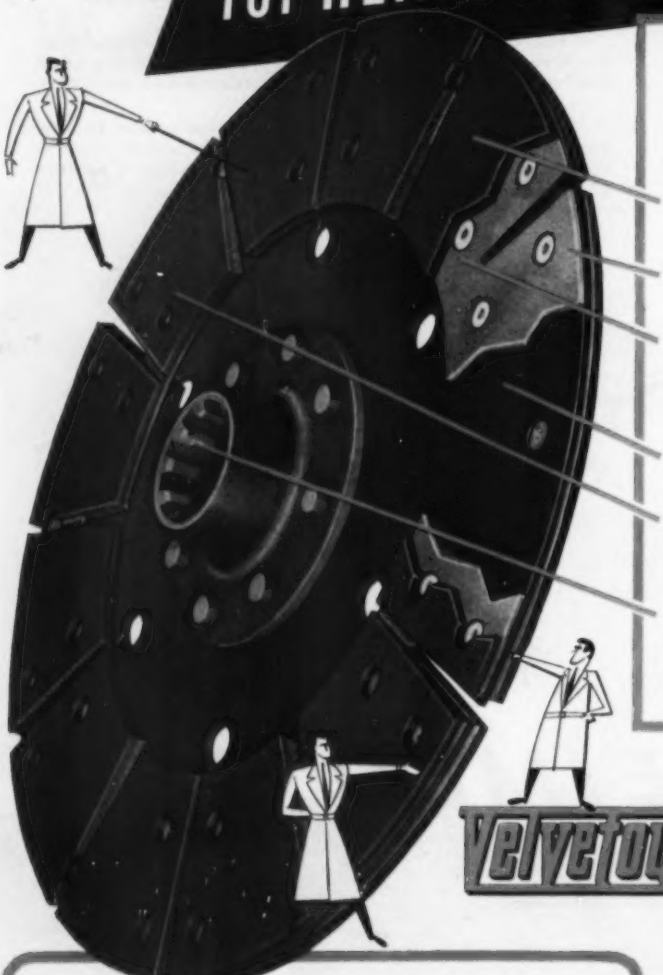
IN FRANCE, SOCIETE EIMCO, PARIS, FRANCE

IN ENGLAND, EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND

IN ITALY, EIMCO ITALIA S.P.A., MILAN, ITALY

# HERE'S WHY...

## EXPERIENCED OPERATORS DEMAND VELVETOUCH ALL-METAL CLUTCH PLATES for HEAVY DUTY use



**Performance records prove that Velvetouch plates reduce chattering and slipping... burn-ups and tear-outs... on clutch jobs that fail because of continued overloading and driver abuse. They're heavy duty built for heavy duty operation, to give you—**

1. **EXTRA MILEAGE** • Velvetouch lasts longer because it's all-metal. Can't glaze or "burn" like asbestos.
2. **EXTRA ECONOMY** • Countersunk rivets can't score opposing plates ... permit extra friction wear.
3. **ADDED SAFETY** • There are no "binders" to loosen or fail with Velvetouch ... because the all-metal friction surface is fused directly to the steel backing.
4. **PEAK DEPENDABILITY** • Sturdy steel backing plate is securely riveted to hardened steel center plate.
5. **EXTRA PROTECTION** • Velvetouch runs cooler because metal conducts the heat away from the plate face. Not affected by oil or grease.

**And all Velvetouch clutch plates are precision machined and rigidly inspected to make installation fast and easy.**

Velvetouch

**VELVETOUCH MATCHED FACING SETS for EXTRA heavy duty use, provide four friction material surfaces instead of two ... insure greater clutch capacity, plus complete protection against costly heat-checked fly wheels and pressure plates. For further information see your jobber, contact our nearest branch or write The S. K. Wellman Co., 200 Egbert Rd., Bedford, Ohio.**

*SEND FOR DETAILS TODAY*

**THE S. K. WELLMAN CO. SALES OFFICES AND WAREHOUSES**

* ATLANTA—110 14th St., N. E., Atlanta 9, Georgia

* CHICAGO—1900 South Western Ave., Chicago 8, Illinois

* CLEVELAND—200 Egbert Rd., Bedford, Ohio

* DALLAS—3407 Main Street, Dallas 1, Texas

** DETROIT—16622 James Couzens Highway, Detroit 21, Mich.

* LOS ANGELES—1110 South Hope St., Los Angeles 15, Cal.

* PHILADELPHIA—1040 West Belfield Ave., Philadelphia 41, Pa.

* PORTLAND—636 N. W. 10th Ave., Portland 9, Oregon

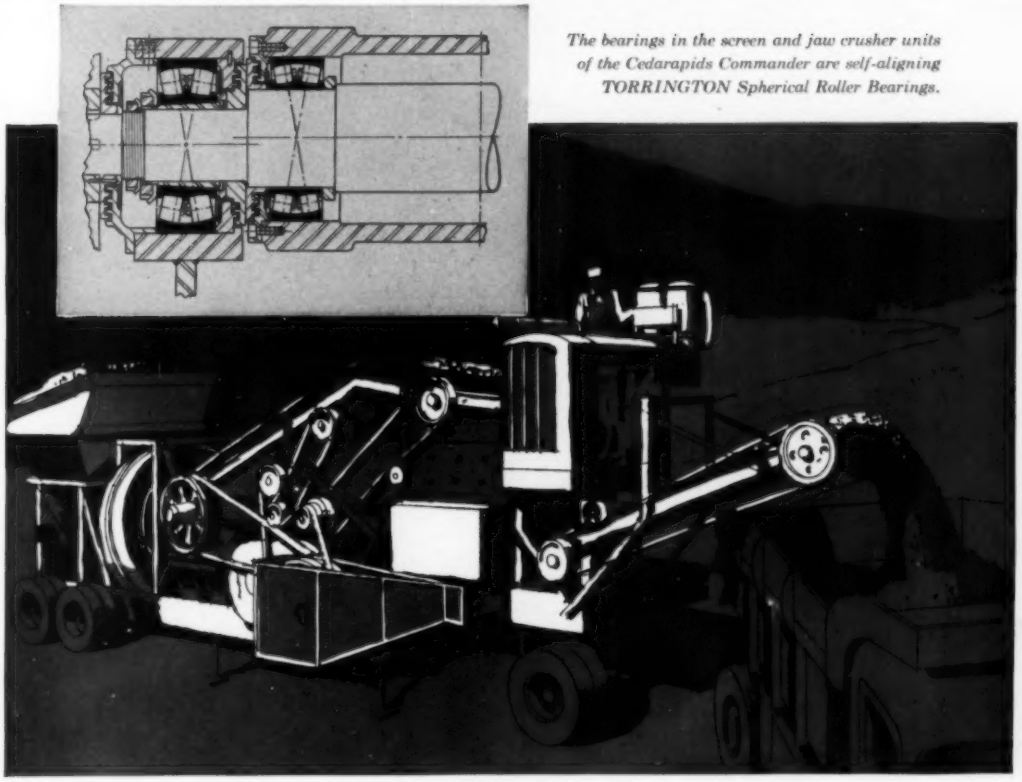
* SAN FRANCISCO—424 Bryant Street, San Francisco 7, Calif.

* TORONTO, ONTARIO—The S. K. Wellman Co. of Canada, Ltd., 2630 Dufferin St.

** WASHINGTON—1101 Vermont Ave., N. W., Washington 5, D. C.

** EXPORT DEPARTMENT—8 South Michigan Ave., Chicago 3, Illinois

* SALES OFFICE AND WAREHOUSE  ** SALES OFFICE



*The bearings in the screen and jaw crusher units of the Cedarapids Commander are self-aligning TORRINGTON Spherical Roller Bearings.*

# Capacity up!

# Cost down!

TORRINGTON Spherical Roller Bearings contribute greatly to the outstanding performance of the Iowa Manufacturing Company's Cedarapids Commander unit. They enable this portable crushing and screening plant to keep "capacity up and operating costs down".

The bearings are manufactured from bearing-quality electric-furnace alloy steels. The land-riding cages are machined from solid cast-bronze rings. The accurate geometrical conformity of rollers and races provides capacity for heavy radial and thrust loads.

That's why major equipment manufacturers specify TORRINGTON Bearings for crushers, vibrating screens, hammermills and pulverizers.

Use the best—specify TORRINGTON.

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

**TORRINGTON SPHERICAL ROLLER BEARINGS**

Spherical Roller • Tapered Roller • Straight Roller • Needle • Ball • Needle Rollers

*Dramatic radar tower of the S. S. United States. The ship was designed by Gibbs & Cox, Inc., built by Newport News Shipbuilding and Drydock Co., and is operated by U. S. Lines, Inc.*

# S. S. UNITED STATES MADE WITH BRICK!

Part of the stern section of the world's fastest liner—lying in a cradle of concrete. It's a graving dock that would not be there, but for brick.

*Refractory* brick, that made possible the production of the cement and the lime. Refractories which GREFCO furnishes the rock products industry with unfailing supply and dependable quality. From 66 mines and manufacturing plants, here and overseas, GREFCO's refractories flow constantly.

For the rotary kilns, kiln hoods, clinker coolers, dust collectors, wasteheat boilers, stacks and dryers—there's the right GREFCO product to do the job.

ACIDO and SPECIAL HR, dense, hard fireclay brick made by GREFCO, are favorites in the Portland Cement industry because of their ability to resist moisture penetration and severe abrasion in drying zones of wet process kilns.

GREFCO high duty fireclay brick are widely used in cold zones of both wet and

dry process kilns. HIAC super duty fireclay brick are preferred by many in the intermediate zone because of superior volume stability and resistance to spalling.

For service in the burning zone of Portland Cement kilns, GREFCO technicians recommend ARCO-70 high alumina brick for normal service, and RITEX A basic brick where conditions are severe. GREFCO high duty fireclay brick are popular in cooling zones, but ARCO-70 is sometimes recommended where the kiln and hood are tightly sealed.

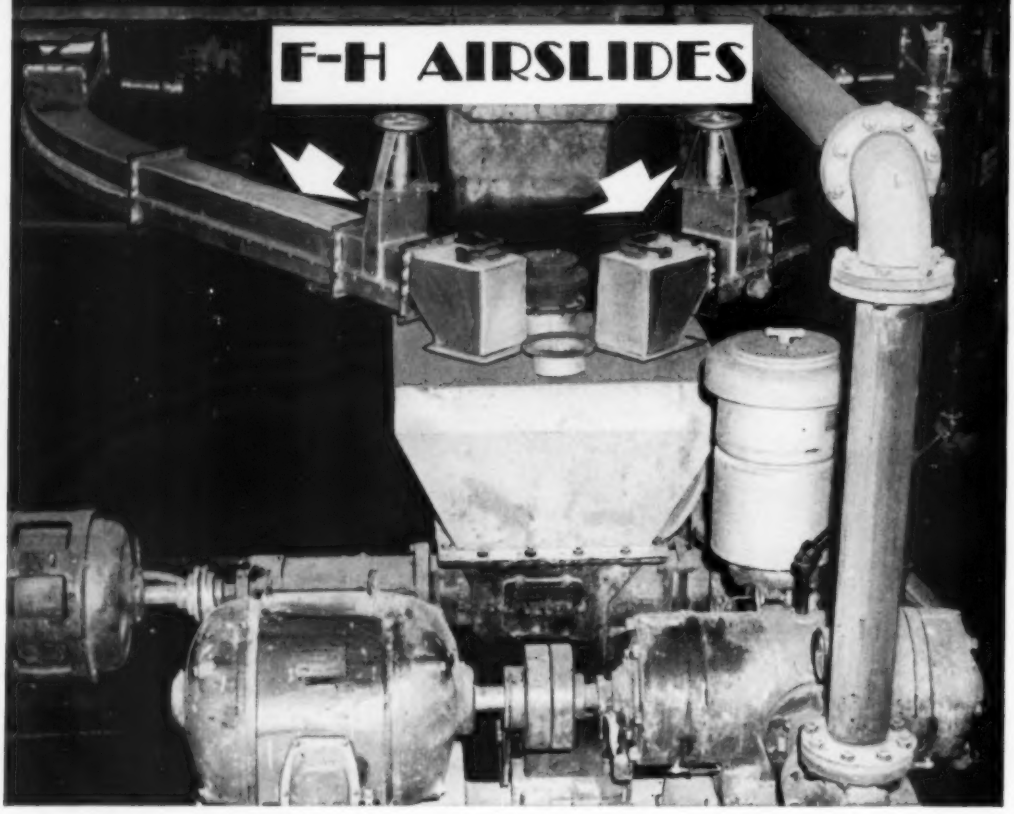
SPECIAL HR high duty brick, ARCO, ARCO-70 . . . and YOUGH silica brick . . . are the GREFCO refractories most often employed in the lime burning industry. For toughest sections of lime kilns, RITEX basic brick are standing up where no other refractory will do the job. Their ability to provide efficiency and economy under all conditions has resulted in continuing demand.

Whatever your operation in the rock products industry, there's a GREFCO product to fill the bill. Call on the services of GREFCO technicians for advice. When you do business with GREFCO you can be sure of a *complete refractories service.*

**GENERAL REFRACTORIES COMPANY**
**PHILADELPHIA**

# GENERAL REFRACTORIES

# *12 tried reasons recommend these*




- Ease of erection, high capacity with low head room. Simple floor or overhead supports save floor space.
- Low Maintenance—no complicated drives, no chains, belts, speed reducers, etc.
- Dustless, noiseless operation.
- Ease in change of direction.
- Extremely low power consumption.
- Small volume of air at low pressure.
- Extreme flexibility not available with mechanical, straight-line conveyors.
- No lubrication. Less weight and bulk.
- Large stock of repairs parts unnecessary.
- No industrial accident hazards.
- Eliminates frequent, costly production interruptions.
- Less labor costs for repairs and replacements.

Here is a typical installation of F-H Airslides, the conveyor system that *floats* dry, pulverized materials like water.

These Airslides deliver pulverized limestone to a hopper above a Fuller-Kinyon Pump, which elevates and conveys the limestone to a grinding-mill feed bin.

F-H Airslide Conveyors have innumerable applications. They eliminate dust nuisances, save man-hours, keep production *flowing smoothly* at minimum operation costs.

The twelve tried and tested reasons at the left are accepted by many Airslide users. If Airslides are new to your material handling thinking, why not ask now for complete data. It may save you money — and it will cost you nothing for this valuable data.

**Fuller**

FULLER COMPANY, Catasauqua, Pa.
120 So. LaSalle St. • Chicago 3
420 Chancery Bldg. • San Francisco 4

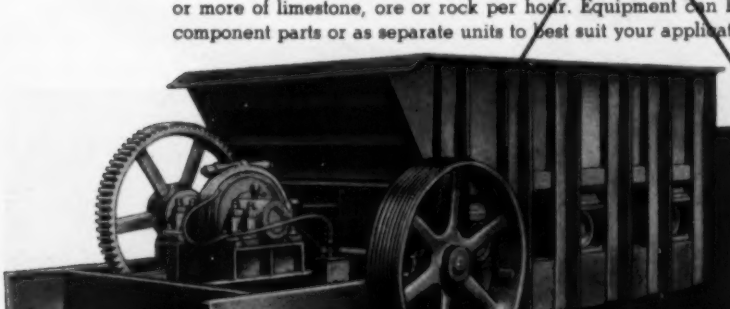
**DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—COMPRESSORS AND VACUUM PUMPS—FEEDERS AND ASSOCIATED EQUIPMENT**

FH-31
1674

# A Great Combination..

## For Low Cost Handling and Crushing Operations!

A combination of McLanahan Reciprocating Plate Feeder and Rockmaster Crusher is your answer to most economical feeding and crushing of 1000 tons or more of limestone, ore or rock per hour. Equipment can be furnished as component parts or as separate units to best suit your application.



1

**Heavy Duty**

Built to handle materials from the size of sand to shovel-loaded rock, McLanahan Adjustable Reciprocating Plate Feeders automatically control the rate of flow of material, and are quickly adapted to the producing capacity of any machine.

2

**Single Roll**

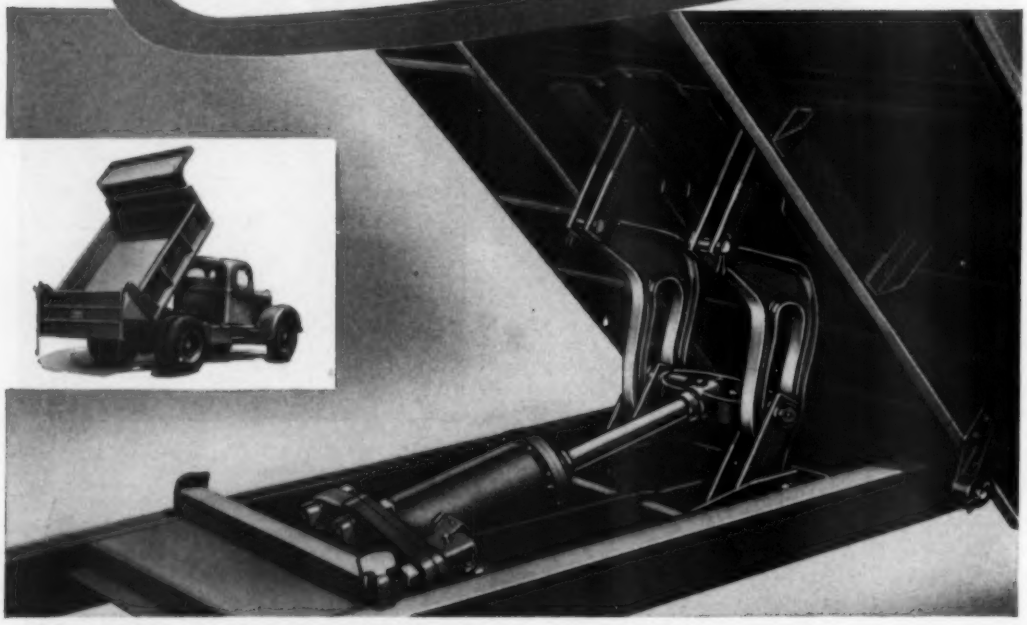
The McLanahan Rockmaster Crusher is the economical solution to most any crushing problems. Greatest savings can be achieved by this combination of equipment. Outstanding for primary and secondary crushing operations, for use on limestone, gypsum, rock, gravel, shale, iron ore, slag and other materials.

*Write Today*
For Bulletins
RM-505 and FRE-4812

**McLANAHAN & STONE CORPORATION**
*Pit, Mine and Quarry Equipment Headquarters*
Hollidaysburg, Pennsylvania

***Dependable Products:*** **Single and Double Roll—and Jaw Crushers, Crushing Plants, Reciprocating Plate and Apron Feeders, Roll Grizzlies, Conveyors, Elevators, Screens, Scrubbers, Steel Log Washers, Sand Dregs, Hoists, Jigs, Dry Pans, Dryers, Scrap Bundlers, Pulleys, Gears, Bearings, Sprockets, Sheaves, Rollers, Bin Gates, Elevator Buckets, Gratings, Car Wheels, Ferrous and Bronze Castings.**

# MARION hoists are designed for Peak-Load Performance



Marion Hoists are designed to operate at a low uniform oil pressure throughout the dumping cycle . . . even under the most severe dumping conditions.

Many ordinary hoists require a peak oil pressure of 1100 pounds per square inch to handle the same job that a comparable Marion Hoist, with patented lifting arms, does at only 615 pounds per square inch.

Consequently, Marion Hoists actually do their job easier — hydraulic systems last longer, are more efficient and dependable, and, in the long run, more economical to own and operate.

Ask your nearby Marion Distributor for the convincing details . . . or write direct to the factory — today!

*"Designed on the Job"*

MARION BODIES AND HOISTS

**MARION METAL PRODUCTS CO.**
**Marion, Ohio, U. S. A.**

**A complete line of standard and special Hydraulic Hoists and Dump Bodies for heavy-duty service**

# "Here's one place where it pays to be TIGHT!

"Shooting a blast is like jumping with a parachute . . . everything's got to work right the first time, or else!

"And everything depends on the loading and hook-up. You need *tight* connections all along the line, and you get 'em quickly and easily with Primacord.

"For the trunk line, I use Plain Primacord. It ties easily in knots that don't loosen up.

"That square knot is used above ground, when you want to lengthen the trunk line.

"Just remember to *pull it up tight*. You can, with Primacord."

*Ask your explosives supplier or write for further facts to*

**THE ENSIGN-BICKFORD COMPANY**
**Simsbury, Connecticut**
***Also Safety Fuse Since 1836***

**PLAIN PRIMACORD**

is very flexible and light in weight. It has a tough textile cover and can be tied up tight without slipping. Use it as the down line in small bore or shallow holes and as the trunk line to connect all holes.

**Other PRIMACORD Brands**

**Reinforced** — for deep holes and resistance to abrasion
**Wire Countered** — for deep ragged holes
**Plastic Reinforced** — for deep holes and unusual wet conditions.

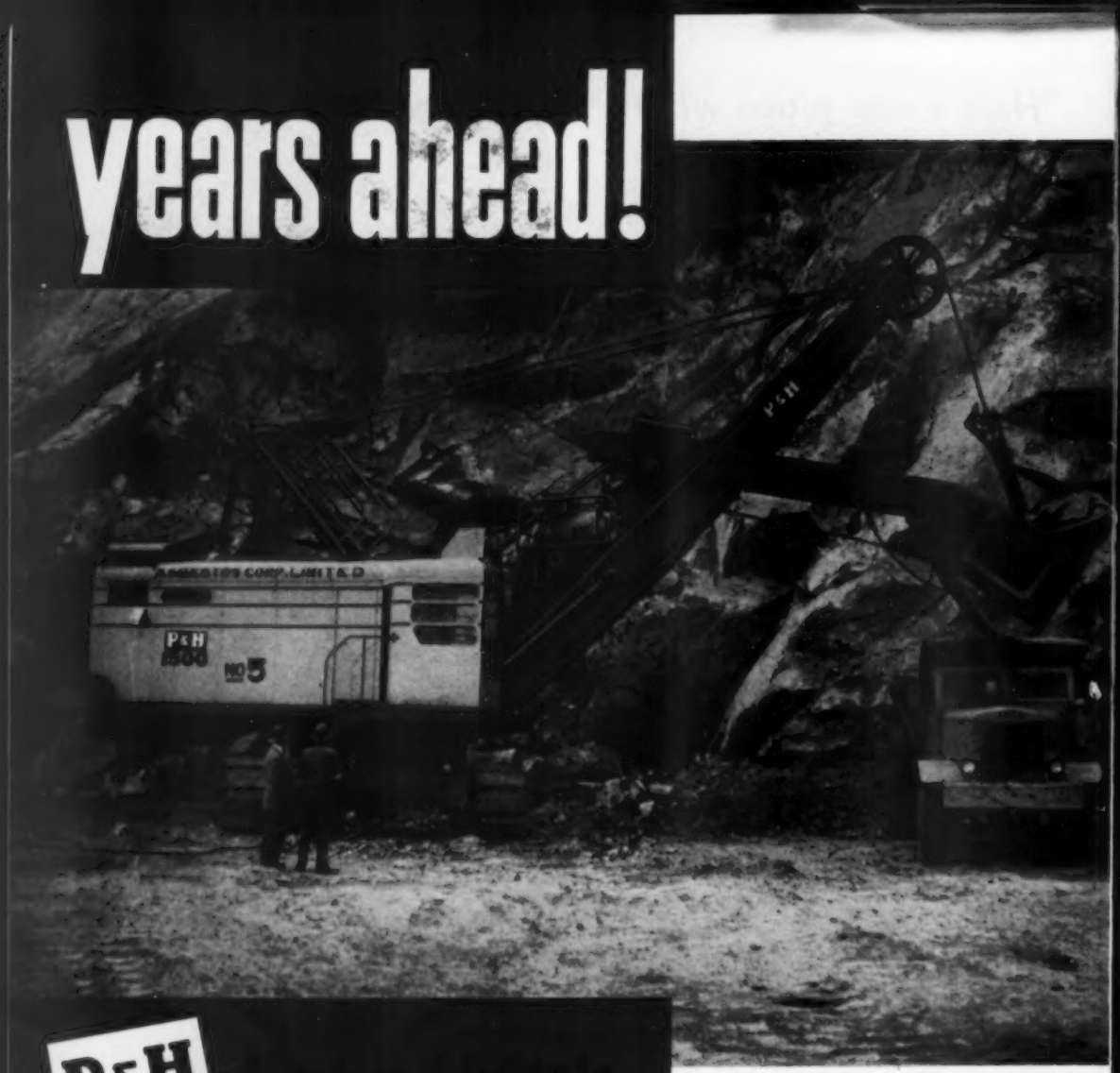



# Use PRIMACORD®

## The PROVED and APPROVED DETONATING FUSE

P-2

# years ahead!




**P&H**

Here's progress far ahead of old fashioned designs — progress that pays off in steadier production . . . lower tonnage costs! For example —

P&H stepless power regulation gives you smoother, more accurate control . . . completely eliminates the complex make-and-break contactors which cause trouble. Furthermore, P&H Magnetorque* Hoist Drive powers hoisting motions electro-magnetically — gives you faster dipper action . . . freedom from maintenance worries.

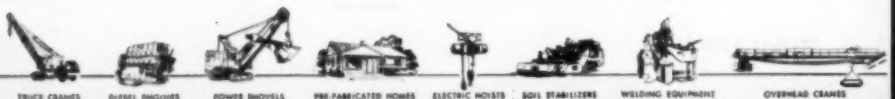
But P&H progress doesn't stop with electrical advancements. Here's the ruggedness of welded alloy steels — backbone for a lifetime of service. But let us direct you to a P&H in action — see *all* the modern refinements that make P&H the top producer in the open pit.

*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

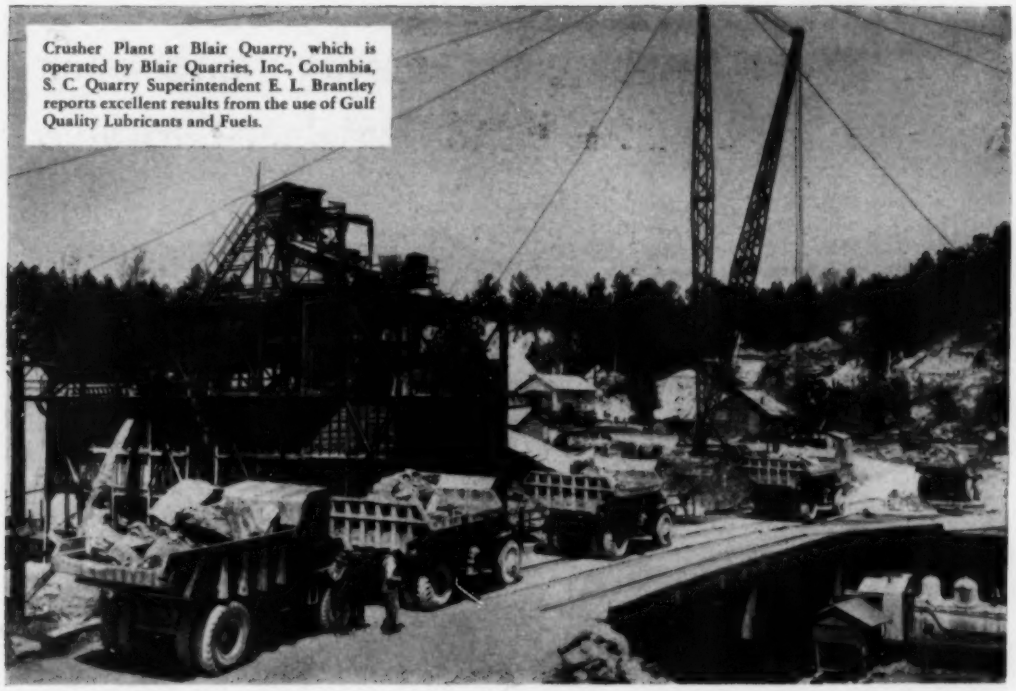
***Every third P&H Electric Shovel sold is a repeat order***

P&H LARGE EXCAVATOR DIVISION
**HARNISCHFEGER**
**CORPORATION**
4400 W. NATIONAL AVENUE • MILWAUKEE 46, WISCONSIN

*the* **P&H** *Line*



TRUCK CRANES · DIESEL ENGINES · POWER SHOVELS · PRE-FABRICATED HOMES · ELECTRIC HOISTS · SOIL STABILIZERS · WELDING EQUIPMENT · OVERHEAD CRANES



Crusher Plant at Blair Quarry, which is operated by Blair Quarries, Inc., Columbia, S. C. Quarry Superintendent E. L. Brantley reports excellent results from the use of Gulf Quality Lubricants and Fuels.

# Gulf Quality Lubricants

## *keep equipment operating smoothly at Blair Quarries, Inc.*

Ask a leading quarry operator like Blair Quarries why they use Gulf lubricants and you'll get an answer something like this: "We feel that our equipment gains an edge in performance with Gulf lubricants—their extra quality is reflected in smoother, more dependable operation, and lower maintenance costs.

"Then Gulf provides an excellent engineering service to help insure that the most suitable lubricants are used for every unit and operating condition."

Let us discuss with you how Gulf products and fine service can help your operation. They are available to you through more than 1400 warehouses in 31 states from Maine to New Mexico. Contact your nearest Gulf office.

**GULF OIL CORPORATION · GULF REFINING COMPANY**
**PITTSBURGH 30, PENNSYLVANIA**

GULF SERVES INDUSTRY

# For Greater Shipping and Loading Convenience ...the improved AMERICAN Container-Cartridge

American Explosives' popular shipping-loading container-cartridge has been modified and improved to afford even greater convenience in quarry operations.

1. Strapped in bundles of two, these cartridges are easy to ship, easy to handle, easily loaded directly into each hole.

2. No danger in dislodging American cartridges, since explosives are completely contained.

3. End labels clearly indicate grade for quick, sure selection.

American shipping-loading container-cartridges are available in a wide variety of densities, velocities and strengths for every shooting need. Save time, save trouble, save picking up empty cases before shooting by using American cartridges. Make your next order American.

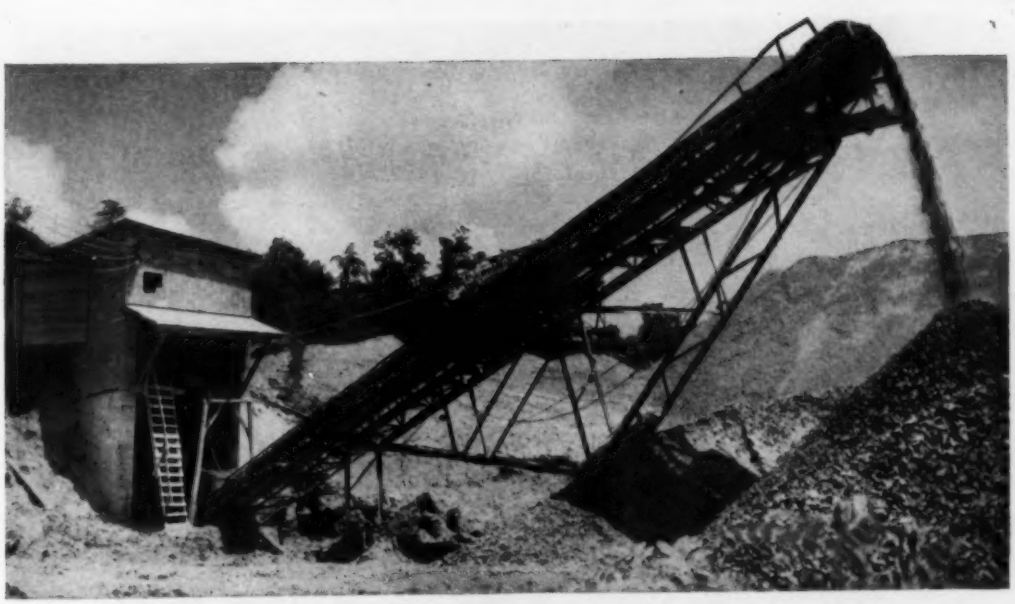
*Capable field engineers are available at your call.*

High Explosives • Permissibles
Blasting Powder • Blasting Accessories

AMERICAN CYANAMID COMPANY
EXPLOSIVES

AMERICAN Cyanamid COMPANY
EXPLOSIVES DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.

Sales Offices: Pittsburgh, Pa., Bluefield, W. Va., Scranton, Pa., Chicago, Ill., Pottsville, Pa., Maynard, Mass.



# 2,500,000 TONS Crushed--

"have yet to replace any essential or expensive parts"

## SAYS GEN. MGR. OF ROCKYDALE QUARRIES CORP., ROANOKE, VA.

7 sizes; get Bulletin 281

We have a 25x36 Telsmith Jaw Crusher which we installed in 1945. From that time to this we have put through that crusher almost two and a half million tons of dolomitic limestone and have yet to replace any essential or expensive parts. The cost has been an extreme minimum and..we are happy to recommend this crusher to anyone with similar problems.

ROCKYDALE QUARRIES CORPORATION

Gordon C. Willis

Gordon C. Willis, General Manager

C-9

# TELSMITH Jaw Crushers

**SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN**

Cable Address: Sengworks, Milwaukee

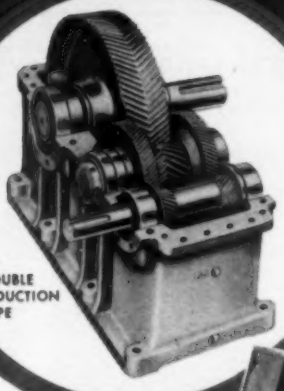
51 East 42nd St. New York 17, N. Y. • 211 W. Wacker Drive Chicago 6, Ill. • 713 Commercial Trust Bldg. Philadelphia 2, Pa. • 238 Main Street Cambridge 42, Mass. • Bocbck Eqpt. Co. Milwaukee 3, Wis. • The McLean Co., 2525 Lakeside Ave. Cleveland 14, Ohio

Marens Eqpt. Co., 432 Main St., Rochester, Mich. • Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash. • Mines Eng. & Eqpt. Co., San Francisco 4, Calif.

Rish Eqpt. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 16, Va. • Interstate Equipment Co., Statesville, N. C.

# BUILT FOR... TOUGH JOBS

Philadelphia HERRINGBONE Speed Reducers



DOUBLE REDUCTION TYPE

The 150 horsepower unit shown above driving a ball mill in a building plaster manufacturing plant demonstrates the rugged construction and built-in stamina found in all Philadelphia herringbone reducers. They've proven reliable in every-day, on-the-job service. With single, double and triple reduction types available in standard ratios ranging from 1.75 to 1 up to 292 to 1 practically any requirement can be met. Efficiencies up to 98% are given.

Send for Catalog H-49 for details.

## Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.

NEW YORK · PITTSBURGH · CHICAGO · HOUSTON · LYNCHBURG, VA.

*Industrial Gears and Speed Reducers*
*LimiTorque Valve Controls*

Adjustable feed plate (1) guides in-coming rock at proper angle into first rotor hammer circle (2). Infed rock is intercepted in motion, exploded instantly by the terrific impact of the rotor hammers and simultaneously projected toward deflector screen grate (3) where finished sizes are immediately discharged.

Oversize particles are deflected upwards, intercepted by feed chute back plate (4) and guided downward into the path of the second rotor hammer circle (5) where they are exploded and projected toward the bottom half of the deflector screen grate and the lower screen grate (7) for immediate discharge.

Both rotor hammers rotate in the same direction toward the rear, promoting fast feeding and keeping all material flowing toward the discharge for top capacity.

Finished product sizes are controlled by the speed of the rotor hammers, and by simple adjustments (8) of stripper bar (6) and lower screen grate.

By controlling the infed rock and directing its flow, the breaking is accomplished by the impact of rotor hammers upon the rock. This reduces wear and makes possible the more uniform gradation cubical aggregate.

## GET THE FULL PROFIT-MAKING STORY

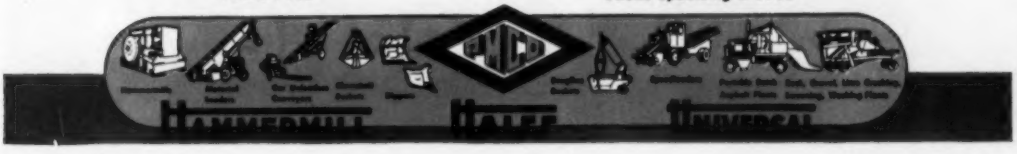
Write for literature. Get complete details on the PMCO Impact Master. Learn all about its high ratio of reduction which eliminates secondary crushers and auxiliary equipment. Get top quality uniform gradation cubical aggregate and greater production of saleable finished sizes. Impact Masters are used in open and closed circuits for producing road-building and concrete aggregates, and can be adjusted for the simultaneous production of aglime when desired. They are available with capacities to 750 tons per hour. Write today.

*PMCO Impact Master Division, Universal Engineering Corporation, 625 C Avenue N.W., Cedar Rapids, Iowa*

**UNIVERSAL ENGINEERING CORPORATION** *Subsidiary of* **PETTIBONE MULLIKEN CORPORATION**

**625 C Avenue N.W., Cedar Rapids, Iowa**
**Phone 7105**

**4700 West Division St., Chicago 51, Illinois**
**Phone Spaulding 2-9300**



"Undoubtedly the most significant development in the field of street and highway maintenance . . ."
—ENGINEERING NEWS-RECORD

Barber-
Mixall
Greene

## THE NEW BARBER-GREENE *Mixall* MEETS THE NEED FOR ALL MAINTENANCE AND SMALL PAVING JOBS

The quotation at the top of this page is typical of impartial observers who have seen the new Barber-Greene MIXALL perform. There is widespread agreement among editors, road builders and government officials that the need for a machine capable of on-the-spot production of even the highest type hot mixes has been answered by the development of the MIXALL.

Primarily designed for "stitch in time" maintenance to prevent major break-ups of much needed roads, the MIXALL also opens the market for surfacing of sidewalks, driveways, parking lots, service stations, playgrounds and countless others.

Once you see the MIXALL perform, you'll quickly recognize the business-building possibilities it holds for you. See your Barber-Greene Distributor for the full story—or write for information.

# Barber-Greene

BG

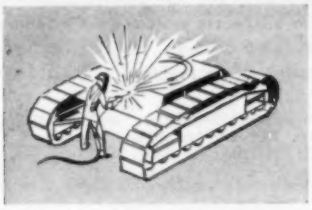
*Aurora, Illinois, U. S. A.*

***Before you buy:***

# SEE 'EM IN ACTION!

Heavy duty ¾ yard LS-85 loads out 6300 tons of limestone flux 5 days a week for A. Courchesne of El Paso, Texas.

## Rugged construction, work-speeding features help you keep production on schedule, costs in line



*More live weight*—All-welded construction plus proper weight distribution provides extra strength without dead weight . . . resists impact and twist . . . simplifies field service.

WHY do more and more quarrymen specify Link-Belt Speeders? Well, take the 30,000-lb. capacity LS-85 for example: It delivers 92 net hp at full load speed, has self-cleaning crawler treads, Independent Boom Hoist, not to mention outstanding stability. It's fast, maneuverable, yet takes rugged rock work with a minimum of maintenance.

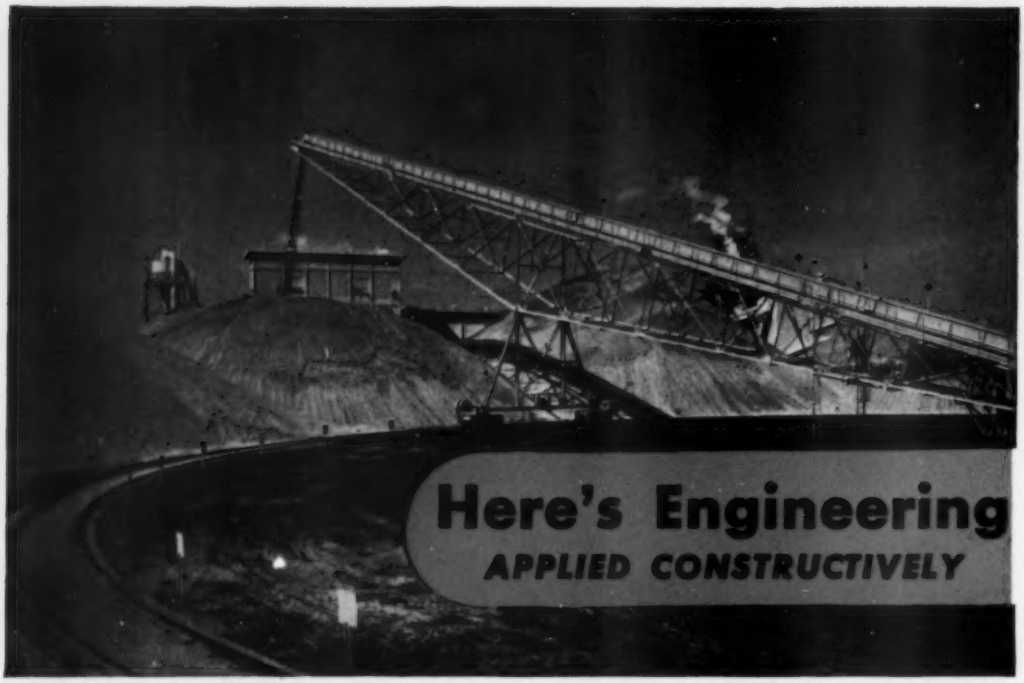
Like the LS-85, every Link-Belt Speeder combines quality construction throughout with advanced design to speed your work, gives you more per equipment dollar.

If you'd like details on this complete line of crawler, truck or wheel-mounted shovel-cranes, ask your distributor or write for Catalog 2373.

**LINK-BELT SPEEDER CORPORATION**
**Cedar Rapids, Iowa** 13,070

**LINK-BELT SPEEDER**
**CORPORATION**
BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

FACTORY-TRAINED
DISTRIBUTOR SALES
AND SERVICE SPECIALISTS
...EVERYWHERE




A belt stacker designed by Jeffrey Engineers becomes an important part of a new-type storage system installed in Florida. Result: Continuous, dependable operation and accurate blending.

Saving: A unique system, the facilities of which prevent delay of railroad equipment and provide better service to customers by permitting quicker deliveries of more-accurately-blended phosphate rock.

How it works: From track hopper rock is fed at 600 to 800 T.P.H. on to a Jeffrey 36" belt conveyor, running up an 80-foot high Stacker which pivots (see photo) over a wide semicircle. Rock is dropped on storage piles consisting of various grades at different points. Grades are blended by proportioning through gates and reclaimed by other Jeffrey belts operating in tunnels under piles. Rock can be removed at controlled rate from any point in the pile, or at several points at once.

This is just one of the many Jeffrey-equipped jobs on which our engineers projected an ingenious application of the Belt Stacker. For applied engineering on those tough assignments — call on Jeffrey.

- Car Pullers
- Bucket Elevators
- Grizzlies
- Crushers
- Pulverizers
- Magnetic Separators
- Chains
- Dryers
- Coolers
- Stackers
- Conveyors
- Packers

THE JEFFREY MANUFACTURING CO.

ESTABLISHED 1877

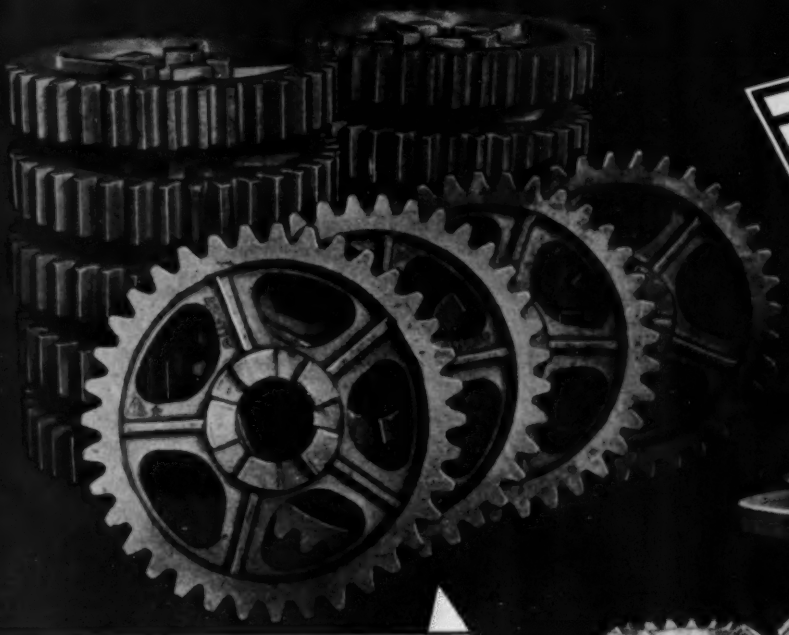
Columbus 16, Ohio

*sales offices and distributors in principal cities*

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED
. . .IT'S A JOB FOR JEFFREY!

# FARRELL-CHEEK



## CAST TOOTH GEARS

FARRELL-CHEEK STEEL CO. SANDUSKY, OHIO, U.S.A.

# *You can tell by the* **PERFORMANCE..**

## *sure they're* "Eucs"!

Wherever they're put to work, "Eucs" do the kind of a job that makes them the preferred equipment for moving earth, ore, rock and coal in off-the-highway service.

Big payloads, fast travel speeds and high job availability add up to more loads per hour and more profit per load. Whatever the job . . . building highways, dams, levees, airports . . . working in mines, quarries or on industrial projects, you can depend on "Eucs" for low cost hauling.

If you own "Eucs" you're already benefiting from their production and profit advantages. If you know them only by reputation, we suggest you get performance facts and figures from your Euclid distributor.

**Euclid Scraper**—15.5 cu. yds. struck, 21 cu. yds. heaped at 1:1 slope . . . 275 h.p. engine . . . top speed, loaded, 28.2 m.p.h.

**Bottom-Dump Euclids**—13 to 25 cu. yds. . . . 190 to 300 h.p. . . . top speeds loaded to 34.4 m.p.h.

**Rear-Dump "Eucs"**—10 to 34 tons . . . 125 to 400 h.p. . . . spring mounted or semi-rigid drive axles . . . top speeds loaded to 36.3 m.p.h.

**The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO**

**EUCLIDS** *Move the Earth*

**Hudson foresters** choose a stand of prime timber for multiwall Kraft from Hudson's 435,000 acres. They practice selective harvesting, always leaving parent trees to help with the new crop, by natural reseeding.

**Careful selection** of trees for mechanized cutting gives uniform quality and dependable supplies of raw materials for pulp making.

**Every year** about 1½ million southern pine seedlings are planted on Hudson tree farms.

# Here is why HUDSON can guarantee Multiwall Sacks against breaking on the packer

**REASON NUMBER 1** HUDSON GROWS ITS OWN TREES

Tree farming is big business with Hudson. Every month the company's Palatka, Florida, mill converts 620 freight carloads, 2,515 truck loads, and 10 barge loads of company-grown pine into long-fiber Kraft.

By growing its own trees, Hudson can exert iron-clad control of Multiwall Sack quality and delivery schedules. This is one reason why Hudson can guarantee to replace *without cost* all Hudson Multiwall Sacks that fail on your packing or closing machines.

## HUDSON MULTIWALL SACKS

***Send for these 3 helpful folders:***

"Avoid Breakage," "Dependable Source of Supply," and latest issue of "Sack Sense." Also full details on Hudson's unusual Replacement Guarantee. No obligation.

**HUDSON PULP & PAPER CORP.,**
**Dept. 104, 505 Park Ave., New York 22, N.Y.**

# users specify AMSCO DREDGE PUMPS

More **Amsco** Pumps have been placed in dredges for sand and gravel recovery, river and harbor dredging, shell reclamation, and more recently, ores such as titanium, than those of any other manufacturer. The reasons for this preference are clear:

**Amsco** Pumps, with working parts made of manganese steel, can withstand the terrific abrasion of sand and the sledge hammer blows of rock much longer than any others.

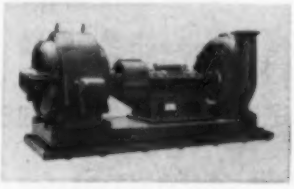
**Amsco** Pumps are designed from experience and engineered for your job.

▶These six basic types of Amsco Dredge Pumps—actually there are 40 different models—give a general idea of the complete line. The basic differences are in rated capacity, weight and construction of bearings, and in proportionate shaft sizes. Such modifications are made for economy...There is no dollar-wasting excess weight on the Amsco Pump engineered for your job. Water end parts are also available in ABK metal subject to our engineers approval.

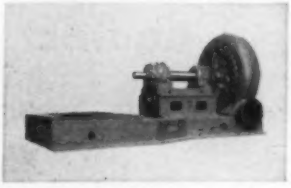
Amsco has a complete line of welding rods and electrodes to assure prolonged life and economical service of Amsco Dredge Pumps.

**16-inch type XH**—directly connected design; right hand bottom discharge. Can be fitted with "standard" or "counter-flow" water ends.

**6-inch type 5B-CF**, form 24—antifriction bearing; stub base or belt driven; right hand bottom discharge.

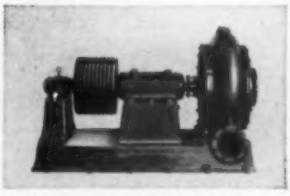


**10-inch type M**—left hand top discharge. Built in 6-, 8- and 10-inch sizes. Can be fitted with "standard" or "counter-flow" water ends.



**20-inch type XHRB-CF**—left hand bottom discharge; antifriction thrust and radial bearings.

**12-inch type H-CF**, form 40—right hand, top vertical discharge; belt driven. Combination two directional-type ball thrust bearing and sleeve-type radial bearings

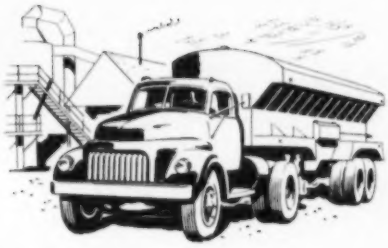


**8-inch type C**, form 30—belt driven; left hand bottom discharge; combination ball thrust and ring oiling sleeve main bearings. Available with "standard" or "counter-flow" water ends.

**Brake Shoe** **AMERICAN MANGANESE STEEL DIVISION**
396 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

# Eaton 2-Speed Axle Trucks deliver EXTRA thousands of lower-cost trouble-free miles



More than
a Million-and-a Half
in Trucks Today!

**Eaton 2-Speeds provide power and speed for quicker full-load trips, at lower cost per mile. Drivers easily select the ratio best suited to road and load, reducing stress and wear, adding thousands of miles to vehicle life. Let your dealer explain how Eaton 2-Speeds make trucks worth more—in use, and when traded-in.**

**EATON** AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO

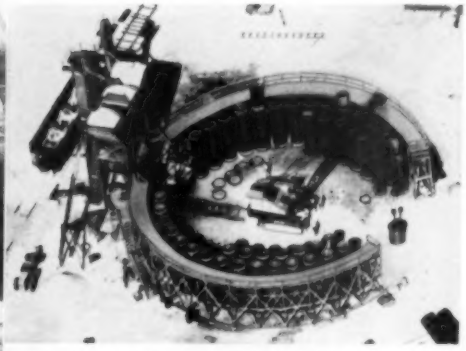
**PRODUCTS:** Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

# HERE'S HOW PRICE BROTHERS CO. HOLD DOWN COSTS ON PRESTRESSED CONCRETE FOR FLORIDA WATER MAIN JOB

## GETTING CENTRAL MIX PLANT LOAD OUT OF ERIE PORTABLE UNIT

## Job calls for 8 1/2 Miles of Prestressed Concrete Pipe.

**This is a GTES 100-yd. combination bin with EWEH 2-yd. AggreMeter, 75 TPH aggregate elevator, 50 TPH cement elevator with supplementary ground storage.**



**Upper photo shows the complete installation sold by Bode Finn of Dayton, Ohio**

**IT TAKES MORE THAN CAPACITY TO MAKE HIGH STRENGTH CONCRETE INTO 8½ MILES OF WATER LINE**

It takes accurate batch control and fully portable equipment. Price Brothers Co. of Dayton, Ohio, are getting both in their Erie Portable unit on location near Miami, Florida.

Using a formula of Oolite rock, lake sand and liquid admixture, the plant you see in the photo turns out a batch of high strength concrete every 7 minutes.

Said Mr. Harry S. Price, Jr., Vice President, "We bought our first piece of Erie equipment back in 1925, and we're still using it. I am happy to say that our experience with Erie Portable on the Miami job is completely satisfactory."

Erie installations are engineered to do the tough jobs. That's why they work better . . . longer. When you consider batching and mixing equipment be sure to get the Erie story. You'll be glad that you did.

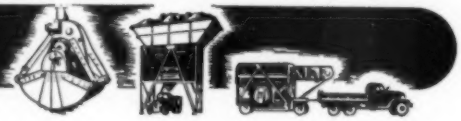
**ERIE**

**STEEL CONSTRUCTION COMPANY**

**3811 GEIST ROAD • ERIE, PENNSYLVANIA**

**Cable Address: OPARD**

**Phone or write for Booklet GS, Dept.**

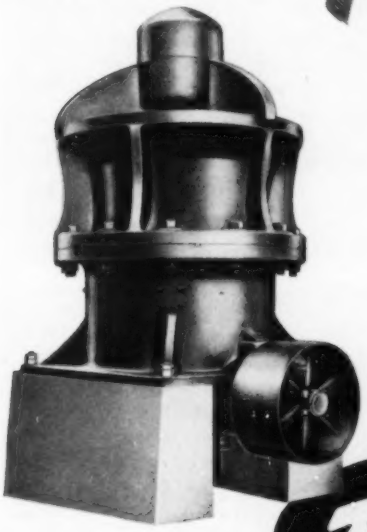


IT'S THAT

# Extra tonnage

YOU GET WITH A TRAYLOR TY
THAT COUNTS FOR

# Extra profits



*Type TY Traylor Reduction Crusher is noted for its simple, compact design . . . maximum strength and operating efficiency. Built in six sizes with feed openings from 3" to 22".*

The extra-heavy construction and exclusive design features of a Traylor TY Reduction Crusher assure extra profits two ways. Less down-time for repairs and greater hourly production with fewer waste fines are both their direct result.

Here's why: Traylor TY's original, self-tightening Bell Head and Curved Concaves apply power more efficiently due to the progressively increasing capacity of each zone in the crushing chamber . . . also they permit finer settings and produce greater tonnage with reduced horse power.

With production costs always inching upward to put the squeeze on profits, it's doubly important to increase production at less cost. Mail the coupon below and get the facts on the ability of a Traylor TY to deliver the goods in *profitable* quantities.

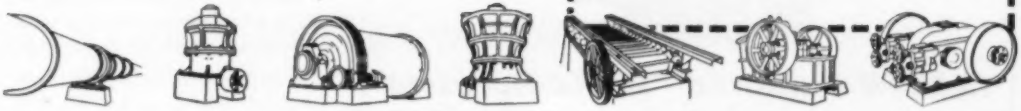
*Mail this coupon today!*

A **Traylor** LEADS TO GREATER PROFITS

**TRAYLOR ENGINEERING & MFG. CO.**
**566 MILL ST., ALLENTOWN, PA.**
Sales Offices: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

**Send Bulletin 7112 immediately, with complete illustrations and specifications on the Traylor TY Reduction Crusher.**

Name: _____
Position: _____
Company: _____
Address: _____ State: _____



# A tip in time to air users who don't want to be stuck

**What's happened to the 500 ft. compressor that everyone used to build?**

**It's gone—completely obsoleted by the "new standard" 600 ft. size introduced by Jaeger in 1946.**

**What's happening to the other old-time sizes?**

**They've been slipping ever since Jaeger brought out 15% to 25% higher "new standard" ratings in 1948, to match your modern air tools.**

**Today, 125 ft. compressors (the size Jaeger originated to replace the 105) are being sold in Canada under 4 well-known American names. Here, in the U. S., new 125, 185, 250 and 365 ft. compressors (the new sizes Jaeger has been building for 5 years) have begun to be announced.**

### The facts, and the choice, are clear:

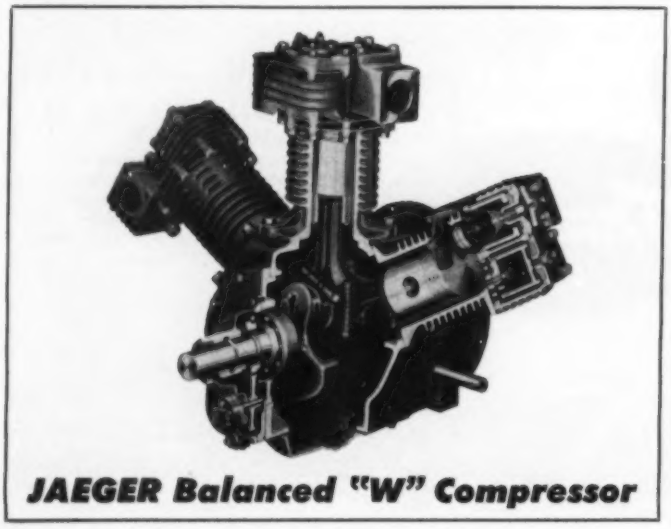
1: All 60, 105, 160, 210 and 315 ft. portable compressors are today as out-of-date as the old 500 ft. Their capacity hasn't changed since 1932. They don't give you air enough to run a full set of today's tools at more than 70 lbs. partial pressure.

2: Any compressors that run hot and shake themselves to pieces, in order to meet Jaeger's higher "new standard" ratings, are basically old models that have been speeded up.

3: *At prices in every case below those asked for old standard compressors,* you can buy a "new standard" Jaeger AIR-PLUS, properly engineered to deliver 15% to 25% more air — 75, 125, 185, 250, 365 and 600 cfm at 100 psi.

4: This additional air maintains steady 90 to 100 lbs. pressure at today's big tools, gives them maximum speed and hitting power, *actually increases work output 30% to 40% with the same men and tools.*

Jaeger Compressors, and Jaeger only, have been delivering these higher air volumes for 5 years, at easy speeds, at moderate air temperatures, and without apparent effort or vibration. Here's why:



**JAEGER Balanced "W" Compressor**

### No other compressors, new or old, have these Jaeger-engineered features

- Balanced 2-stage, W-type compressor unit in every size from 75 to 600 ft. (Far smoother than "V" units, in which low and high pressure cylinders are unequally opposed.
- Positive lubrication by gear-driven oil pump, in all sizes.
- Relief valve for automatic intercooler drainage, standard all sizes.
- 75% to 100% larger valves, bigger intercoolers and air receivers to handle 15% to 25% more air and dissipate more heat.
- Reserve horsepower and bigger multi-plate clutches than any other compressors.
- Automatic Fuel Miser standard on all models where control of engine speed effects worthwhile fuel savings.

Why pay more, and get far less, than Jaeger gives you?

# with an obsolete compressor in 1953

## The construction industry needs these 6 "new standard" ratings—and no more

**Model 75** (75 cfm at 100 psi)
Runs a heavy breaker at full efficiency.

**Model 125** (125 cfm at 100 psi)
Runs 2 heavy breakers or a 55 lb. sinker at full efficiency.

**Model 185** (185 cfm at 100 psi)
Runs 3 heavy breakers, 1 heavy or 2 medium rock drills, at full efficiency.

**Model 250** (250 cfm at 100 psi)
Runs a 3½" wagon drill, 2 heavy rock drills or a 10 hp Ka-Mo earth drill at full efficiency.

**Model 365** (365 cfm at 100 psi)
Runs a 4" wagon drill plus a plug-hole drill, or operates 15 hp Ka-Mo earth drill — at full efficiency. Also ideal for heavy sand blasting and gunite work.

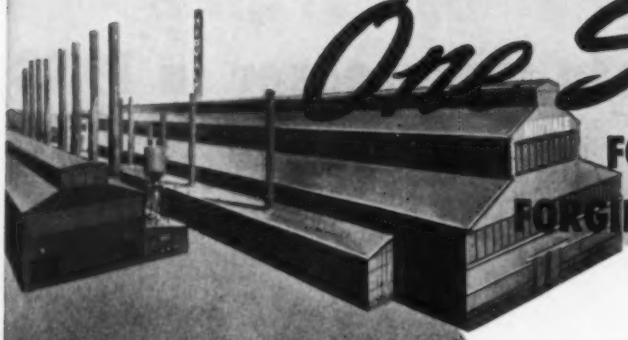
**Model 600** (600 cfm at 100 psi)
Runs two 4" wagon drills plus a hand-held drill, or powers a heavy 9B-3 pile hammer — at full efficiency.

**Learn more about operating air tools:**
Complete Jaeger Catalog lists many modern types of pneumatic tools and their air requirements for maximum efficiency. Facts given in no other catalog. Ask your Jaeger distributor or write for Catalog JC-1.

## THE JAEGER MACHINE COMPANY

**602 Dublin Ave., Columbus 16, Ohio**

Pumps • Mixers • Truck Mixers • Paving Spreaders and Finishers



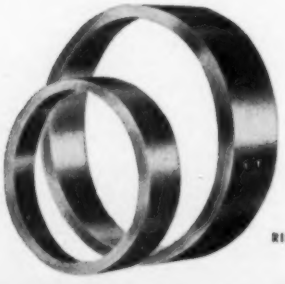
# One Source

## FOR "SPECIFICATION" FORGINGS AND CASTINGS

STEEL ROLLS

PRESSURE VESSELS

PRESS CYLINDER



RINGS

Name your requirements . . . show us your blueprints . . . and Midvale engineers and craftsmen working with the finest equipment will produce the forgings or corrosion and heat resisting castings you need.

Midvale can assure you of the finest in craftsmanship, precision and ultimate performance. Whether it is weldless gear rings for turbine speed reduction . . . cylinders for hydraulic presses . . . weldless high-pressure vessels for oil refining, gas reactions and steam generation or hardened and ground steel rolls for cold rolling steel, aluminum, copper, brass, zinc, foil, paper, linoleum, plastic and rubber, Midvale engineers can help you design them. Midvale craftsmen will build them to your most exacting specifications. Put your forging and casting problems in our hands . . . you'll be satisfied with the results.

**THE MIDVALE COMPANY**

NICETOWN, PHILADELPHIA 40, PA.

OFFICES: NEW YORK • CHICAGO • PITTSBURGH
WASHINGTON • CLEVELAND • SAN FRANCISCO

# MIDVALE

*Custom Steel Makers to Industry*

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

*FOR INCREASED LIME PRODUCTION!*

# KENNEDY KILNS ARE "TOPS"!

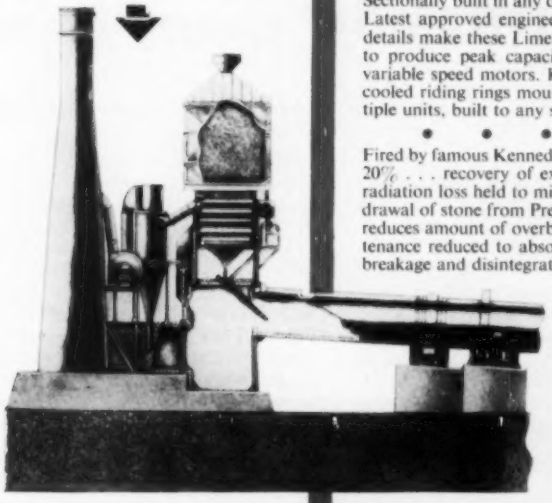
## SPECIALLY DESIGNED FOR UNIFORM PRODUCTION...*MAXIMUM OUTPUT AT LOWEST OPERATING COSTS*

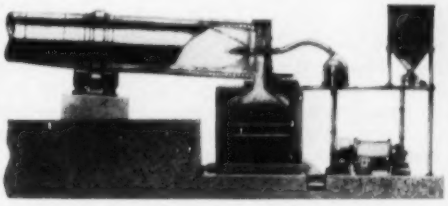
**Kennedy Stone Preheater, Deheater and Soaking Pit: Increases capacity and efficiency of either long or short kilns.**

**Kennedy Rotary Kilns: Coolers: Dryers:**

Sectionally built in any diameter, Kennedy Kilns are in use throughout the world Latest approved engineering features combined with exclusive KVS construction details make these Lime producers outstanding for strength, durability and ability to produce peak capacities at lowest operating costs. Gear reducers driven by variable speed motors. Kiln rotation increased or decreased as desired. Internally cooled riding rings mounted on self-aligning bearings. Available in single or multiple units, built to any specifications.

Fired by famous Kennedy Air Swept Tube Mill System. Increases capacities UP TO 20% . . . recovery of exhaust gases effect FUEL SAVINGS UP TO 40%! Heat radiation loss held to minimum; KVS special discharge mechanism regulates withdrawal of stone from Preheater and assures uniform treatment of all stone. Greatly reduces amount of overburned and underburned lime. No moving parts . . . maintenance reduced to absolute minimum. Gradual temperature fluctuations prevent breakage and disintegration of stone or lime.





*Get the facts on KVS Lime producing equipment BEFORE you specify. Literature sent on request. Consultation anywhere, anytime.*

**IT COSTS LESS.. TO OWN THE BEST!**

**KENNEDY - VAN SAUN**

**MANUFACTURING & ENGINEERING CORPORATION**

**TWO PARK AVENUE, NEW YORK**

**FACTORY DANVILLE, PA.**

● SHOT IS FIRED IN COYOTE TUNNEL AT MOUNTAINSIDE QUARRY.

# More than a million tons of well-broken rock produced by huge "NITRAMON" quarry blast

Up to 1,500,000 tons of well-broken stone were produced when the largest commercial blast ever witnessed on the West Coast took place last summer. The blast contained 372,298 pounds of Du Pont "Nitramon"* in a 1000-foot coyote-tunnel layout at the Corona, Calif., quarry operated by the Minnesota Mining and Manufacturing Company.

Large coyote shots are an ideal method of blasting these extensive deposits of dacite porphyry. The rock is used in the production of roofing granules, and excellent breakage is required for best efficiency. "Nitramon" has been continuously used in primary blasting since this quarry operation began.

"Nitramon" is ideal for jobs of this type. It's the safest blasting agent known. It can't be detonated with ordinary blasting caps, by fire, friction or sudden impact of falling objects. Still . . . a "Nitramon" Primer (itself relatively insensitive) dependably detonates every charge. Packed in watertight containers, "Nitramon" can be loaded far in advance of firing. In addition, its safety features allow stringing regular lighting lines into coyote tunnels . . . materially speeding up the job of loading.

Whenever you're planning coyote-tunnel or large-diameter blast-hole shots . . . you can be sure of maximum safety and better breakage by using Du Pont "Nitramon." Its superior safety, convenience and economy explain why quarry owners and operators from coast to coast heartily endorse it. The Du Pont Explosives representative in your district will gladly give you complete information. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Del.

● RESULT SHOWS EXCELLENT BREAKAGE OF ROCK REQUIRING MINIMUM OF SECONDARY BLASTING

## DU PONT "NITRAMON"

*A Product of Du Pont Explosives Research*

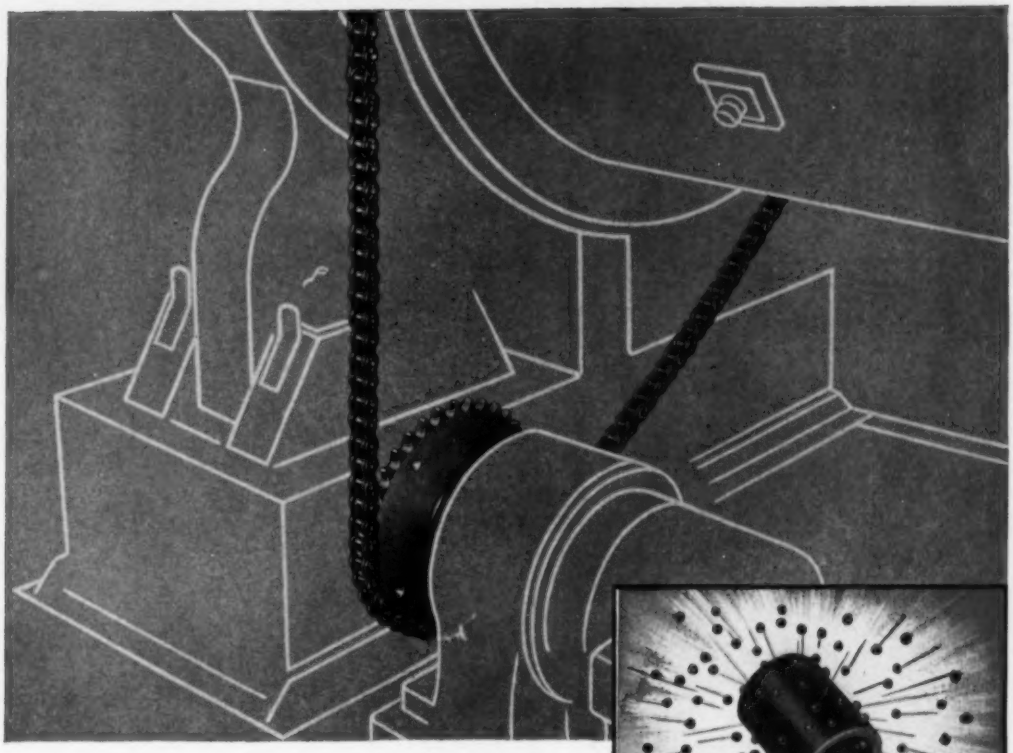
DU PONT

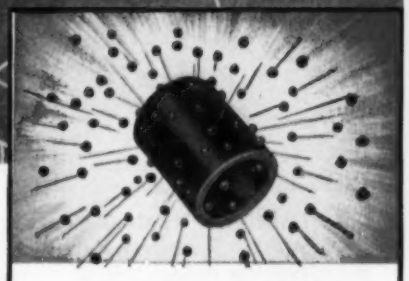
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

*Reg. trade-mark for nitrocarbonitrate blasting agent

# Yes, SHOT-PEENED rollers add fatigue life to your roller chain





*Look for the distinguishing darkened rollers.* Thousands of tiny steel balls hammer the metal—"cold work" each roller . . . pay off in extra fatigue life . . . added ability to withstand shock and impact.

## . . . just one of the extra-life features you get with every LINK-BELT Roller Chain

WHETHER it's for drive or conveyor service, every Link-Belt Roller Chain gives you a performance bonus. In addition to shot-peened rollers, lock-type bushings multiply capacity to withstand shock loading. And closer heat-treat control, rigid testing and thorough inspection pay off in greater uniformity . . . extra years of life. Link-Belt Precision Steel Roller Chain is built in single or multiple widths, ⅜" through 3" pitch. Double pitch 1" through 3". A call to your nearby Link-Belt office will bring you prompt, expert service. Send for Engineering Data Book No. 2457.

18,110

LINK-BELT

ROLLER CHAIN & SPROCKETS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

# here's muscle to move mountains | IN 6 YARD BITES!

**LIMA TYPE 2400—The largest member of the Lima family is engineered and constructed for heavy duty service with higher dump, greater reach, and faster digging cycle.**

**EASY INSTANT CONTROL —** Smooth, "Precision" air control of travel and operating motions lessens operator fatigue. Anti-friction bearings, reduce power robbing friction and step up efficiency.

**BIG YARDAGE PRODUCER—** Maximum power and fast digging cycles originate from a husky 12" cylinder Diesel engine of approved make. Equipped with torque converter power take-off.

**LOW OPERATING COSTS —** Truck and rotating bases are integrally cast for extra-rigidity and long life. Adjustments rarely needed on full mechanical clutches. Easy maintenance.

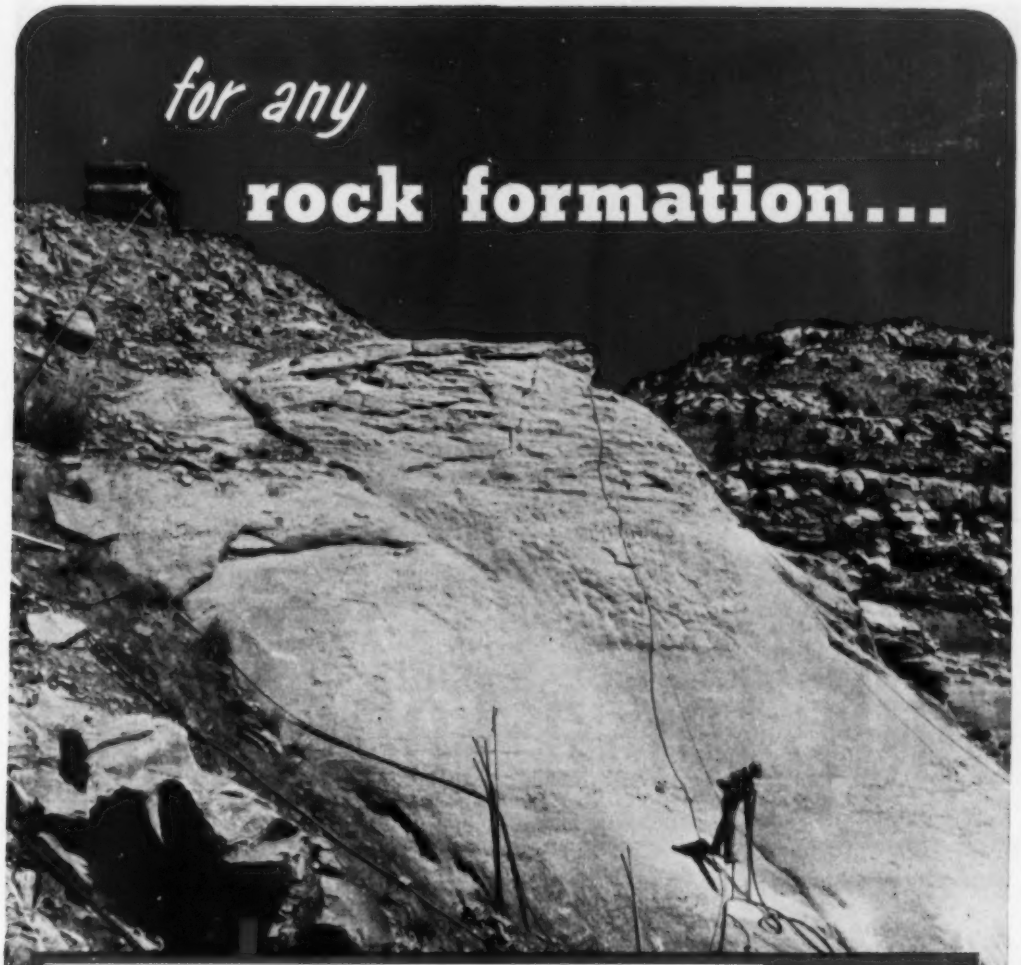
Offices in Principal Cities of the World

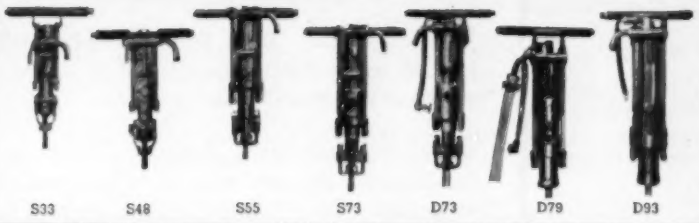
**LIMA**
SHOVELS • CRANES
DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

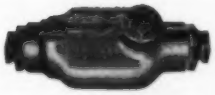
*for any*

# rock formation...






. . . one of these fast-drilling, hard-hitting Gardner-Denver Sinkers is just right. Bulletin HHD-11 tells all about 'em. Write for your copy today.



An LO12 Line Oiler in the line keeps your rock drills oiled — automatically.

## GARDNER-DENVER Since 1859

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd.,
14 Curity Ave., Toronto 13, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

Midwestern installation of five Allis-Chalmers 9 x 12 rod mills and 450-hp, 100% pf, 440-volt, 257-rpm, pedestal bearing synchronous motors.

# Built for a Long Grind

*Here are three reasons why Allis-Chalmers grinding mill motors help keep your mills grinding economically year after year:*

**Each motor** is engineered for its job. A-C's half century of experience building electrical equipment *and* processing machinery assures torque and other operating characteristics tailored to the individual installation requirements.

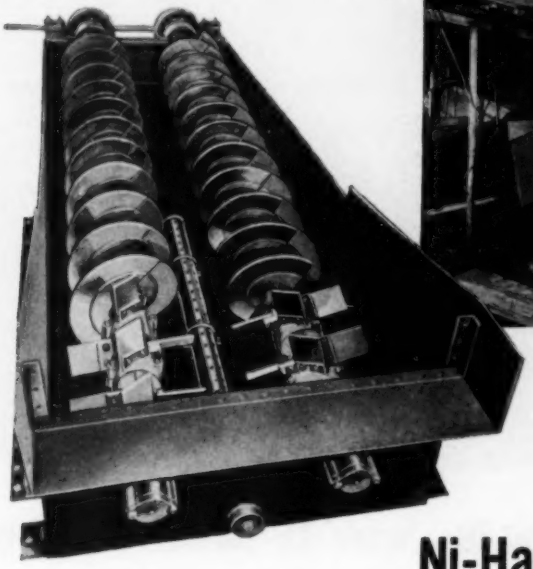
**Time-proved** basic design features contribute to long life and trouble-free operation. These are described in Bulletin 05B7648.

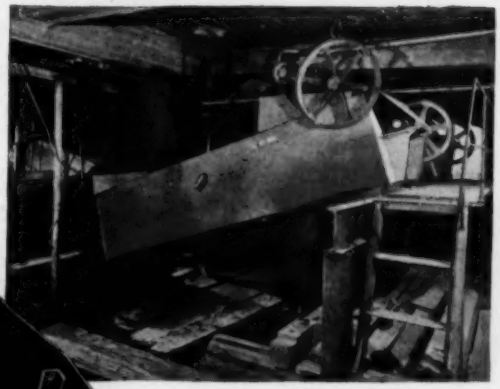
**Adequate** manufacturing, inspection and testing facilities insure that each motor will be built exactly as specified.

For more information on motors that minimize maintenance and down-time, call in your A-C representative, or write for illustrated Bulletin 05B7648. Allis-Chalmers, Milwaukee 1, Wisconsin. A-3946

**ALLIS-CHALMERS**

**NI-HARD FLIGHTS** (Double Screw) for EAGLE Coarse Material Washer.





**NI-HARD FLIGHTS RESIST WEAR** and abrasion in this equipment made by EAGLE IRON WORKS, Des Moines, Iowa. Above view in the Minneapolis plant of INDUSTRIAL AGGREGATES, INCORPORATED, shows three coarse material washers . . . two in the foreground and one in the left background.

# Ni-Hard Flight Screws provide Spectacular Resistance to wear in Washers and Classifiers

These three EAGLE washers remove clay, silt and other impurities from large volumes of coarse sand. Installed at the Minneapolis, Minnesota plant of INDUSTRIAL AGGREGATES, INCORPORATED, they first used gray iron flights.

These flights, however, soon wore out, and several were replaced by those of Ni-Hard®.

While no exact comparison figures are available, it appears that this plant operator is getting substantially more than twice the life from Ni-Hard screw flights . . . and, as a result, plans to standardize on Ni-Hard.

Performance records show that Ni-Hard provides abrasion resistance at lowest ultimate cost. Use it to cut maintenance expense and production costs by decreasing downtime for repairs or replacements.

Make use of our 20 years' experience in the Ni-Hard field . . . it is quite possible that Ni-Hard *will stand the gaff* on your particular application.

Produced under foundry controls to meet INCO's high specifications, Ni-Hard is obtainable from authorized foundries, coast to coast, in all shapes common to the iron industry. Get full details...use the coupon now.

At the present time, nickel is available for end uses in defense and defense supporting industries. The remainder of the supply is available for some civilian applications and governmental stockpiling.

---

**THE INTERNATIONAL NICKEL COMPANY, INC.**
**Dept. 20, 67 Wall Street, New York 5, N. Y.**

Please send me booklets entitled: "Engineering Properties and Applications of Ni-Hard" and "Buyers' Guide for Ni-Hard Castings."

*Name* _____ *Title* _____

*Company* _____

*Address* _____

*City* _____ *State* _____

**THE INTERNATIONAL NICKEL COMPANY, INC.** 67 WALL STREET NEW YORK 5, N. Y.

**1** Galions are familiar sights on big construction projects . . . where schedules are directly dependent upon equipment reliability.

# RIVER VALLEY CARTAGE CO., Inc. uses 15 Galion Package Dump Trailers to speed up production . . . cut costs!

**2** On the highway, Galion's perfectly balanced bodies move easier and faster . . . carry more payload.

**3** Side view as driver pulls away after dumping.

Late in 1951, River Valley Cartage Co., Inc., Elgin, Illinois, purchased its first Galion Tandem Axle Trailer. The order was placed with Axle & Equipment Sales Co., Chicago, a leading Galion distributor.

Results were so sensationally successful that 8 more units were placed in service in mid-summer 1952. (See statement by Clarence A. Schroeder, president, on opposite page). And—now on order for spring delivery from "Illinois' largest" cartage company are 6 more Galions.

River Valley's experience with Galion Package Dump Trailers is typical of leading truckers and construction firms everywhere. Galions are designed and built better to serve longer . . . to keep your job rolling steadily without interruption and earn you greater profits.

A-4857

TYPICAL GALION ALLSTEEL PRODUCTS INCLUDE

Mighty-Mite Twin Cylinder Hoist

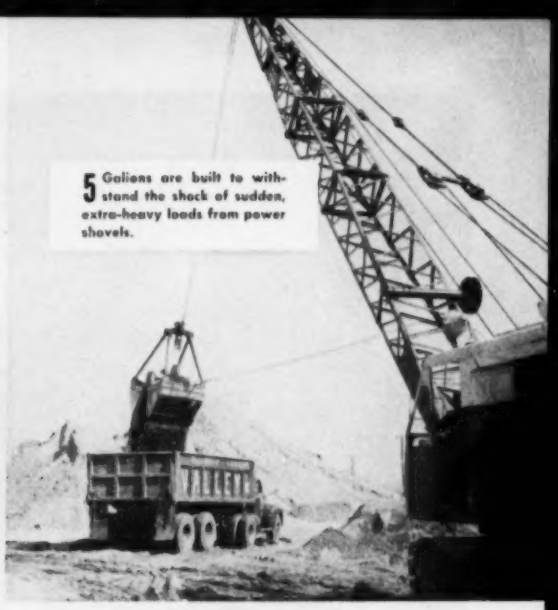
LOAD-evator Hydraulic End-Loader

Standard Hydraulic Hoists

Heavy Duty Hydraulic Hoists

THE GALION ALLSTEEL BODY COMPANY • GALION, OHIO

4 Heart of the Galion Package Dump Trailer is the No. 77380-7" twin telescopic, 3-stage hoist.



5 Galions are built to withstand the shock of sudden, extra-heavy loads from power shovels.

# "GALION Twin Telescopic Hoist has unbelievable lifting capacity" *says River Valley Cartage Co., Inc.*

"As soon as our first trailer was received (1951), we immediately put it to test. The results were very gratifying indeed.

"The body is powered by a Galion Extra Heavy Duty Twin Telescopic, 3-stage hoist which has an unbelievable lifting capacity. This fact was proven at the Material Service Pit at South Elgin, where the trailer was loaded with 60,000 lbs. of material. It was amazing to see the ease with which this gigantic body was raised and the load dumped . . . This unit has been constantly used under the most trying conditions and has proved highly satisfactory . . . ."

River Valley Cartage Co., Inc.

Clarence A. Schroeder, President

**GALION** manufactures hydraulic hoists and dump bodies to meet every need of every user. The Galion line includes units of all types . . . from LOAD-evator rear end-loaders and small conversion hoists for pickup trucks . . . to the world's largest dumping equipment, designed and built to meet extra heavy duty requirements. For complete information, see your nearest Galion distributor. Or write for Catalog L-6512.

Standard Galion Dump Bodies | Heavy Duty Dump Bodies | Gravity Roll-Over Bodies | Telescopic Hoists and Trailer Bodies

*. . . AND GALION WILL DESIGN SPECIAL EQUIPMENT TO MEET YOUR SPECIAL NEEDS.*

6 Galion's positive hoist control assures steady dumping cycle . . . eliminates high rear axle loads . . . provides even spreading.

7 No. 12 Semi-Bay Front Body is designed and built in accordance with Galion manufacturing principles . . . provides the utmost in Action-Balance-Construction.

THE GALION ALLSTEEL BODY COMPANY • GALION, OHIO

# GET THE PROFIT MAKING ADVANTAGES OF THE TORQUE CONVERTER NOW in a MANITOWOC

Get that extra power, extra speed, extra smoothness that means extra yardage, now, with a Torque Converter driven Manitowoc excavator.

No other machine like it. Gives you more power when you need it, more bail pull in tough going — smoother, faster acceleration throughout the entire cycle. Enables you to handle bigger loads, shock loads, jars and jolts without damage to mechanism.

And when it comes to rock, you'll hardly believe your eyes. It "slugs" right through, like the old steam powered rigs. It's the greatest advancement in shovel history — and it's yours now, today, in the Manitowoc line. Backed by over 12 years' experience—now in hundreds of Manitowocs. Send for details. Manitowoc Engineering Corp., Manitowoc, Wisconsin.

## BALANCED POWER

Engine operates at maximum efficiency at all times — full engine power for full loads — just enough power for light loads — automatically selected. Engine cannot be stalled — no delays waiting for engine to pick up speed.

## SMOOTHER OPERATION

Oil cushion absorbs jolts and jars. Saves cables, clutches, gears and assemblies. Less down time means more yardage.

## PRECISE CONTROL

"Fraction of inch" control by either hand throttle or foot accelerator, without slipping clutches or shifting speeds. Makes an expert out of an average operator. Ideal for crane service, setting steel and stone, and general erection work.

MANITOWOC Speedcrane

SHOVELS 1-5 YD. CRANES 18-100 TON

**IT LASTS LONGER . . .** That's why Homoflex Hose saves you money. Workmen like it because they don't have to "fight" it. It's light, flexible, easy to handle, with no pre-set twist . . . and very strong for handling air, water, other fluids and gases. In addition to all this, R/M engineers found a way to make the parts of Homoflex Hose inseparable—adding still more to the life of the hose. If you want to lower your hose costs just raise your standards to Homoflex . . . Ask the R/M Distributor for Bulletin 6879. He'll tell you about other R/M hose types for steam, oil, suction, chemicals . . . also how you get MORE USE PER DOLLAR with R/M transmission, and conveyor belt and V-belts.

RM

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

**RAYBESTOS-MANHATTAN, INC.**

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings Asbestos Textiles • Teflon Products • Packings • Sintered Metal Parts • Bowling Balls

**New International R-164 LOADSTAR.** GVW rating 17,000 lbs. 130, 142, 154 and 172-inch wheelbases.

# NEW INTERNATIONAL TRUCKS

## *BUILT as only IH can build them*

The 168 basic *New* International models embody the engineering principles, used in International's continuing program of truck research and development, that have resulted in hundreds of exclusive International features that have meant greater profits for truck buyers.

## *PROVED as only IH can prove them*

The 307 features in the *New* International Truck line have been *proved* in the world's most advanced Truck Engineering Laboratory; *proved again* at International Harvester's 4000-acre desert Proving Ground at Phoenix, Arizona.

## *VALUE only IH can give you*

The *New* International Trucks offer an unmatched combination of values—the right truck for the job, unequalled performance, lowest maintenance and operating costs, maximum driver comfort.

***Now—the features you want—***
***in America's most complete truck line***

**New International styling** identified by the IH emblem . . . **Exactly the right power** for every job. First truck builder to offer choice of gasoline or LP gas with Underwriters' Laboratories listing in 1½-ton sizes and other models . . . **Designed by drivers for drivers.** Comfo-Vision cab with one-piece Sweepsight windshield. New comfort and interior styling . . . **Steel-flex frames** proved best in the field . . . **Transmissions** to meet any operating requirement . . . **296 Wheelbases** ranging from 102 inches up . . . **Easy starting and greater fuel economy** . . . **Wide range** of axle ratios for all models . . . **Real steering comfort and control** . . . Sizes from ½-ton to 90,000 lbs. GVW rating. Now—See The New IH-Built, IH-Proved International Trucks at your nearest International Dealer or Branch.

**INTERNATIONAL HARVESTER COMPANY • CHICAGO**

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

*Better roads mean a better America*

**INTERNATIONAL TRUCKS**
*Standard of the Highway*

PICKED . . . FOR ANOTHER TOP-LEVEL OPERATION . . .

*Now at*

**CHUQUICAMATA**

(CHILE, S. A.)

# SHEFFIELD MOLY-COP

TRADE MARK

COPPER-MOLYBDENUM-ALLOY

*Grinding Balls*

Used and PROVED Around The World

## Deliver Higher Efficiency and Economy

THE STORY of Chuquicamata can be told only in superlatives . . .

THE LARGEST known copper orebody in the world, will produce more than 300 million pounds of blister copper a year, and treat 30,000 tons of ore a day. The Anaconda workings are a landmark in mining operations.

SHEFFIELD MOLY-COP GRINDING BALLS play a vital role in this record-breaking project. Their longer service in the new sulphide concentrator means lower grinding costs, fewer chargings, and less "down time."

SUPERLATIVE PERFORMANCE of Sheffield Moly-Cop grinding balls is the result of years of research, and quality-controlled methods of manufacture—from initial alloy steel production to final heat treatment.

*LET SHEFFIELD prove how Moly-Cop Grinding Balls will do a better job for you.*

**SHEFFIELD STEEL CORPORATION**

HOUSTON KANSAS CITY TULSA

SUBSIDIARY OF ARMCO STEEL CORPORATION

*Export Representatives:* ARMCO INTERNATIONAL CORPORATION, MIDDLETOWN, OHIO

*Your Management wants to know...*

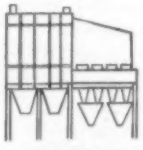
# The most profitable approach to dust recovery

In every industry, from rock products to food to steel, Buell engineers, working with plant engineers, have established an enviable 18-year record of turning unnecessary dust losses into substantial new profits. What's more, Buell Dust Recovery Systems uncover, for all American industry, these additional important advantages: improved product quality, smoother plant-community relations and higher employee morale.

To take advantage of Buell's background and experience in the highly specialized science of dust recovery, ask for further information about Buell's **3 basic systems** of dust collection. See how they can help you turn dust into dollars. Send for Buell's new, informative bulletin titled, "The Collection and Recovery of Industrial Dusts." Buell Engineering Co., Dept. 18-C, 70 Pine Street, New York 5, New York.

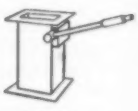
VAN TONGEREN CYCLONE

'SF' ELECTRIC PRECIPITATOR



PRECIPITATOR—CYCLONE COMBINATION

TYPE 'LR' COLLECTOR



DUST HOPPER VALVES

ELECTRIC CYCLONIC buell

ENGINEERED EFFICIENCY IN DUST RECOVERY

# WORLD'S LARGEST* TRUCK

*Based on total live capacity less net weight.

## DART

40 TON MODEL 60

**Model 60 SPECIFICATIONS**

Powered by two Diesel engines rated-ing 700 H.P.; net weight 86,000 lbs.; gross weight 240,000 lbs.; the new 40 is a record-setter. The power of each engine is transmitted through torque converters to separate planetary rear axles. The front axle is turned by hydraulic power on a unique steering principal by caster effect, to a revolu-tion-ish strut. A specification portfolio is available at your request.

This is the truck which will influence truck design for years to come . . . the 40 ton DART.

Anticipating that the industry has reached its limit in the "scaling-up" of conventional design, the DART TRUCK COMPANY conceived and built the Model 60.

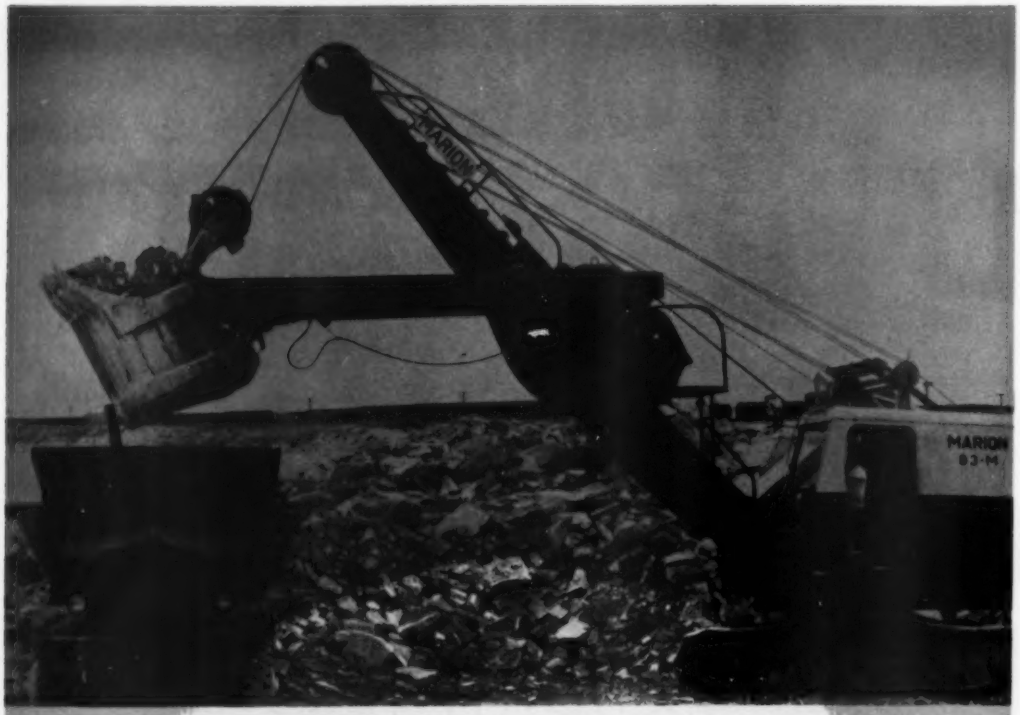
It is an [illegible] in truck design—a combination of advanced engineering and time-proved features.

As the star performer in DART's 50th Anniversary Year, it is proof again that to carry more per load for less cost—you can rely on DART.

50 GOLDEN YEARS OF SERVICE

DART TONNAGE ENGINEERED TRUCKS

2621 Oak Street, Kansas City, Missouri




# How BIG Is a 2½-Yard Rig?

Bigger than you think, unless you know the MARION 93-M. Genuine "bigness" in a shovel, dragline, clamshell or crane is a blend of many features. The MARION 93-M has them all.

Crowd the dipper into rock, ore or shale. Feed it the hoist power — all it has. Watch the 93-M show its muscle and deliver real hoist speed and power without flinching. In heavy loads, there's reserve strength for every digging need.

Such performance qualities give an operator confidence as he proceeds in tough digging. The combination of speed and power in hoisting, digging and swinging lets him get things done in a hurry. Fingertip ability to spot the dipper keeps him fresh on the job. His machine's sheer strength and power keep things moving dependably at a fast pace, year after year.

Such factors make the 93-M a bigger producer than you might expect from a 2½-yard machine. Proof is yours for the asking, either in performance records of machines in the field or in terms of the engineering and construction features which make such performance possible.

Let us tell you more about this truly BIG 2½-yard MARION.

**MARION** POWER SHOVEL CO.
MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

from ⅜ cu. yd. to 45 cu. yds.

# *Cut mill operating expenses to the bone!*

## Install longer-lasting U·S·S LORAIN ROLLED PLATE LININGS...

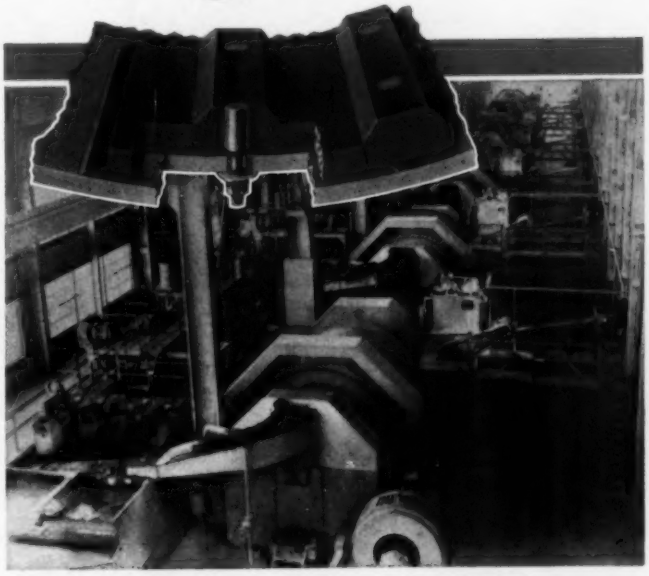
# *Save on every ton you grind!*

NO matter what you grind, U·S·S Lorain Rolled Plate Linings will produce better grinding results, more economically. They're made in easy-to-handle sections that save hours of installation time. They keep mill down-time to a minimum. They're so rugged they'll wear 'til they're paper thin without failing!

Made from top-grade *rolled steel*, Lorain Linings have far greater wearing life than regular cast linings. Their outstanding strength makes possible the use of thinner sections, saves first cost of metal . . . increases usable diameter of the mill, boosts output. The tight joints between ends of plates and close fit between plates and lift bars eliminate shell wash and allied troubles.

The Liner Plates of Lorain Linings are made symmetrical and interchangeable. Severe localized wear at feed or discharge end can be balanced by heat-treating. The Lift Bars, carefully designed to insure correct cascade action, are available in different lift heights to suit conditions. Lift height will remain approximately constant for life of the lining.

U·S·S Lorain Rolled Plate Linings are available—in the diameter, length and thickness best suited to your operating conditions—through leading mill manufacturers whose names will be furnished upon request.



Installation shows seven Allis-Chalmers' 10½' x 11' Ball Mills.

**U·S·S GRINDING BALLS** make better, more economical grinding doubly sure. Available in sizes from ¾" to 5" in diameter. For further information just return this coupon.

United States Steel Corporation
Room 2809-J, 525 William Penn Place
Pittsburgh 30, Pa.

Without obligation on my part, please send me your FREE booklet on U·S·S Grinding Balls.

Name.....

Company.....

Address.....

City..... State.....

UNITED STATES STEEL CORPORATION, PITTSBURGH, PA. • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## U·S·S LORAIN ROLLED PLATE LININGS AND U·S·S GRINDING BALLS

USS

3-218

UNITED STATES STEEL

# Workhorse SECO's ON THE JOB

At Shippingport Sand & Gravel Company, Shippingport, Penna.

## WELL KNOWN PRODUCER MAKING BIG TONNAGES OF GRAVEL SIZED *RIGHT* TO MEET PENNA. SPECS.

Meeting state and other specs. to a T is an important reason why Shippingport Sand and Gravel Company enjoys such a fine reputation with their many customers. At the modern Shippingport, Penna. plant of Shippingport Sand and Gravel Company of Youngstown, Ohio, these Seco vibrating screens are winning the acclaim of the operators for accurate sizing and big production. These rugged screening work-horses (one 5 x 10' single deck scalper and two 5 x 10' double deck Seco's) take the load effortlessly and efficiently to produce a number of sizes including Penna. shot, Penna. 1B, Penna. 2B and minus 1/8" sand. Whatever specs. your sizes have to meet, regardless of the number of sizes, it will pay you to investigate Seco vibrating screens for your job. Send for Catalog #203.

**SECO**

**TRUE CIRCULAR ACTION**

**VIBRATING SCREENS**

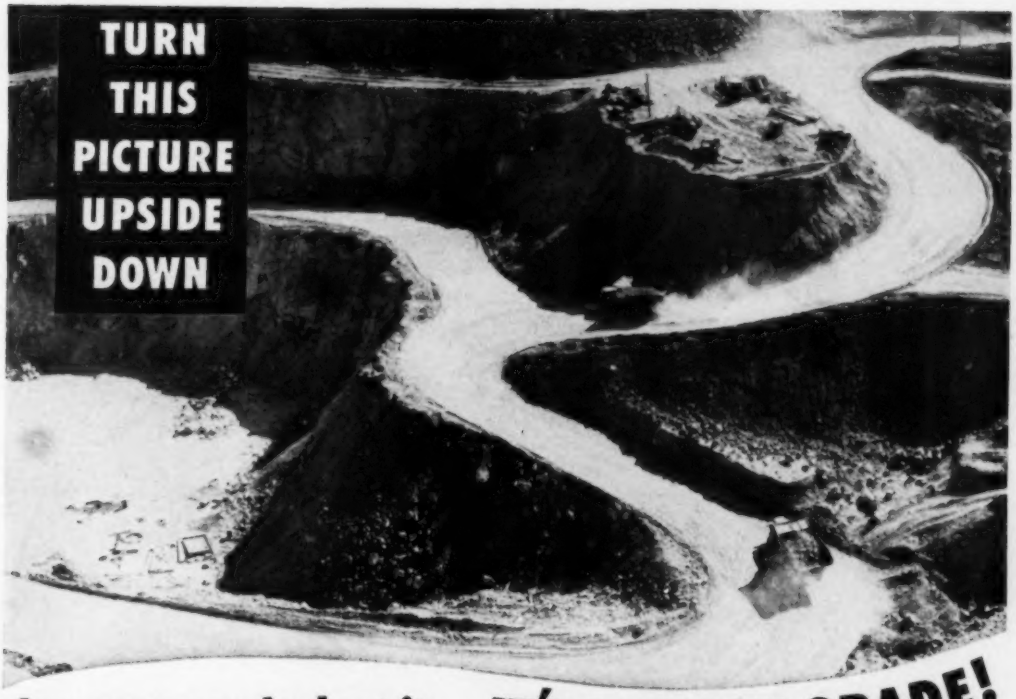
**Over 350 models to meet every need from scalping to final sizing.**

**Seco specializes in vibrating screens. Send your problems for prompt, personalized recommendations. No obligation.**

**SCREEN EQUIPMENT CO., INC.**

1750 Walden Avenue

Buffalo 21, N.Y.



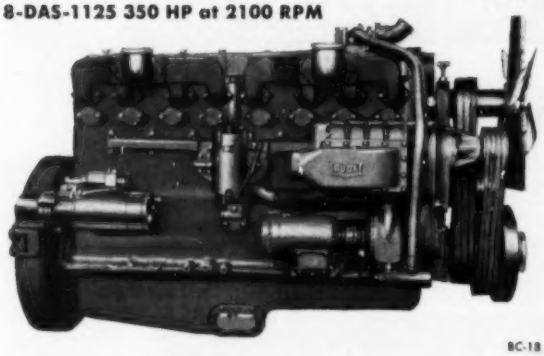

# Any way you look at it... IT'S A TOUGH GRADE!

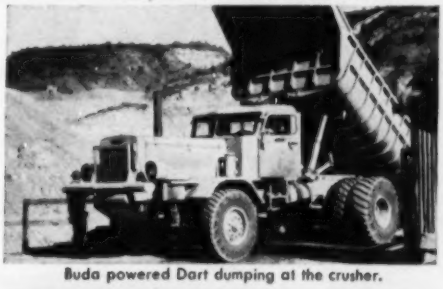
## yet BIG BUDA diesels are cutting haulage costs every day!

14 Buda-powered haulage units are roaring up this tough grade . . . 2/10 of a mile with 5 switchback turns . . . hauling payloads up to 22 tons in faster time at a considerable reduction of their former cost.

The extra horsepower and 13 to 25% more displacement . . . greater lugging ability with 9 to 23% more torque of BIG Buda Diesels is paying off at this Bagdad Copper Corp. pit in higher production and lower costs. In many instances, the Budas are going more than 6000 hrs. before overhaul—another factor in lowered costs.

**8-DAS-1125 350 HP at 2100 RPM**





Buda powered Dart dumping at the crusher.

BC-18

**Whatever your power requirements, there's a money-making Buda dyna-swirl Diesel to fit your needs. See your nearby Buda Distributor today. Write for Bulletins and data. *The Buda Company, Harvey, Ill.***

**BUDA**

Manufacturers of Diesel and Gasoline Engines, Maintenance of Way Products, Lifting Jacks, Earth Drills and Material Handling Equipment

for

STRENGTH

EASY HANDLING AND FILLING

SHARP, CLEAR BRAND PRINTING

CHASE Multiwall Bags

especially designed
for the packaging, shipping
and storage of Rock Products

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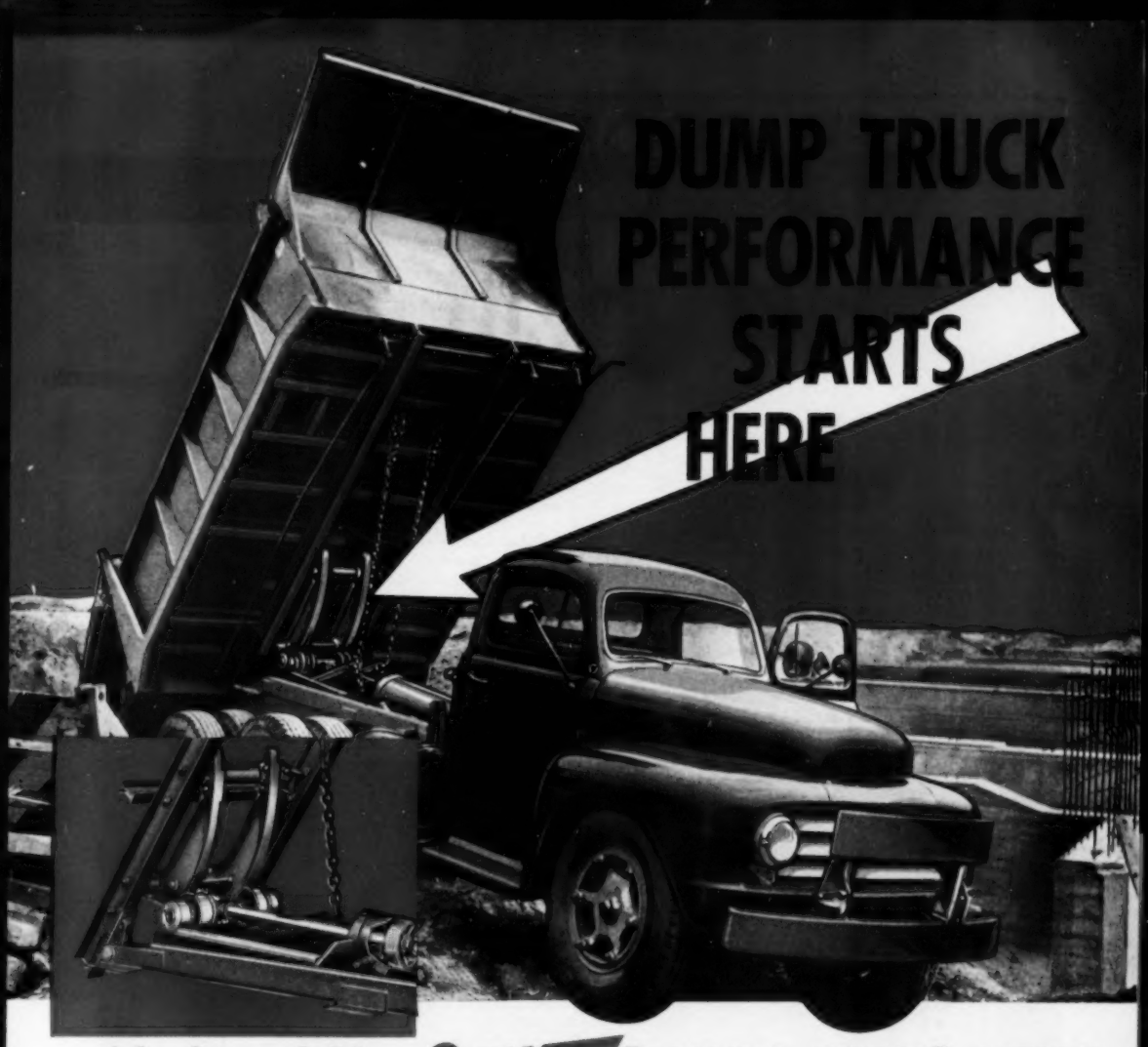
CHASE BAG COMPANY

GENERAL SALES OFFICES 309 W. JACKSON BOULEVARD
CHICAGO 6, ILLINOIS
30 BRANCHES AND SALES OFFICES STRATEGICALLY LOCATED




## with dependable GarWood "ROLLING WEDGE" ACTION

Here, in the heart of the hoist, is where the years-ahead design of Gar Wood's famous "Rolling Wedge" cam and roller action pays off in superior performance and unmatched dependability. Exclusive "Rolling Wedge" cam and roller action provides built in control of oil pressure during the entire lifting cycle. Oil pressure remains uniform at all times—there are no sudden changes from low to high or from high to low. Pump life is substantially lengthened and sudden shocks to hydraulic system are eliminated.

Scientific cam design with exclusive, lift-proportioned cam contour provides maximum lifting effort at the start of the lift *without increased hydraulic pressure*. Reduced cam entering angle gives greater lifting effort with slower, smoother action at the start. Stresses to hoist and chassis are eliminated. As the rollers are forced deeper, cam contour changes to provide accelerated lifting as the center of the mass is moved towards the discharge end of the body. *Oil pressure remains uniform during this entire lifting cycle.*

For smooth, dependable operation—and for longer service life in rugged dump-truck operation—specify Gar Wood "Load Engineered" Dump Bodies and Hoists when you buy new equipment. There's a size and type to fit your needs exactly. See your nearby Gar Wood dealer soon or write direct for complete specifications and application information.

Customer Service Department, SM100
**GAR WOOD INDUSTRIES, Inc.,**
**36812 Main St., Wayne, Michigan**

Please send me complete information about Gar Wood Dump Bodies and Hoists for my hauling job.

Name_____
Company_____
Address_____
City_____ Zone____ State_____
Describe operation briefly_____

**GAR WOOD INDUSTRIES, INC.**
WAYNE, MICHIGAN

GAR WOOD GW INDUSTRIES

TRUCK EQUIPMENT: Dump Truck Bodies and Hoists, Winches and Cranes, Refuse Collection Units, Elevating End-Gates. CONSTRUCTION EQUIPMENT: Excavators, Scrapers, Dozers, Ditchers, Spreaders, Pinegraders, Truck-Mounted Road Graders.

# FULLER COOLERS

the standard

## here's Free Heat you may be wasting

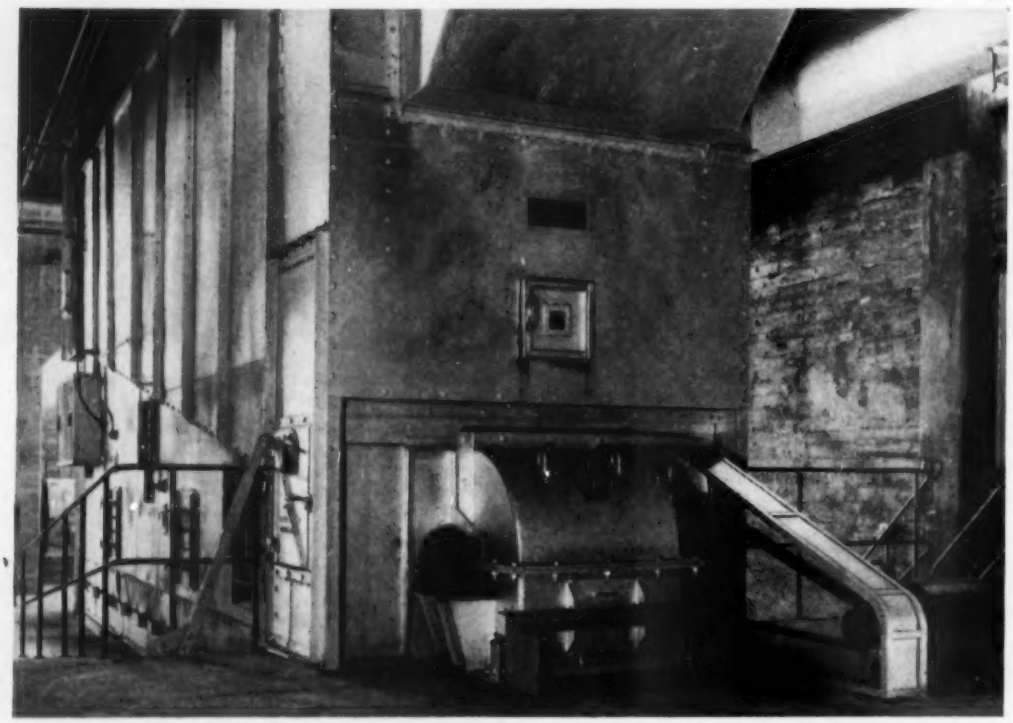
Heat removed in the cooling process is efficiently reclaimed by the application of the advanced design of Fuller Coolers, and made available as combustion air.

It was only natural that the Fuller Cooler should be successful and meet the requirements desired . . . conceived, designed, and built by engineers having many years of actual experience in the cement industry, who knew the problems of the industry and what was needed. With this experience and knowledge they set out to build, not just another cooler, but one that would actually meet the desired, peculiar requirements, in the most highly satisfactory manner.

This determination, and continuous application of experience, have had their reward, as is evidenced in the general acceptance by the industry, and the many coolers installed and on order. Many are repeat orders, due to the excellent performance of initial installations.

Fuller Coolers are currently handling materials like pebble lime, ores, dolomite, iron nodules, and Portland cement clinker at a rate of approximately 113,970 tons per day. This record has been built on a basis of advanced thinking and sound engineering . . . engineering that enables every installation to operate at maximum efficiency with minimum maintenance.

Take advantage of Fuller's long experience in materials handling and cooling . . . a talk with a Fuller engineer may lead to more profitable operation in your plant.



One of two Fuller Clinker Coolers installed in a southern cement plant, each equipped with a Fuller Clinker Breaker. Coolers are designed to cool 2200 barrels of clinker a day from approximately 2500-deg. fahr. to 150 degrees discharge, with cooling air at 80-deg. fahr. Air is supplied by a fan having a capacity of 33,660 c.f.m. at 6-inches static pressure; fan driven by a 50 hp. motor.

## by which all others are measured

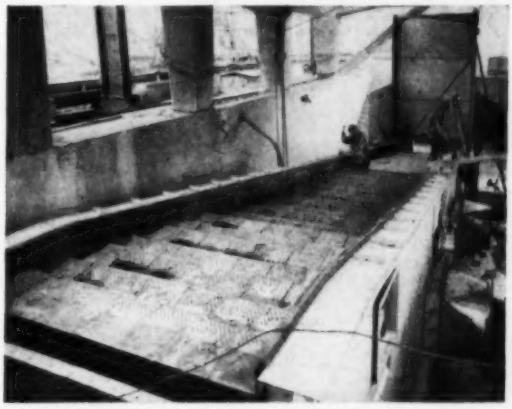
Cooler installed in a cement plant in Mexico, showing fan and air ducts to air chamber of cooler.

Two of five Fuller Clinker Coolers installed in a cement plant in California. Coolers are designed to cool 5000 barrels of clinker a day from approximately 2500-deg. fahr. to 150 degrees discharge.

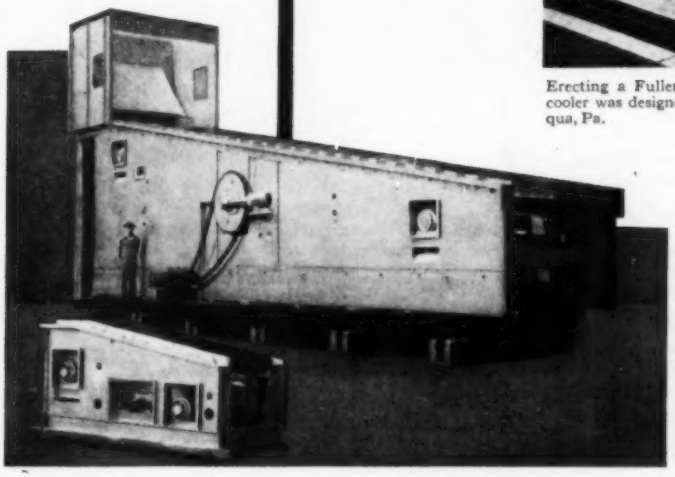
FULLER COMPANY, Catasauqua, Pa.
120 So. LaSalle St.—Chicago 3
420 Chancery Bldg.—San Francisco 4

# Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—
COMPRESSORS AND VACUUM PUMPS—
FEEDERS AND ASSOCIATED EQUIPMENT



Erecting a Fuller Clinker Cooler in Holland, early 1951. This cooler was designed and built in Fuller Company shops, Catasauqua, Pa.



The largest and smallest cooler built. The large one is 7′ x 44′, and the small one is 3′ x 12′. The larger cooler was shop-erected and grates operated before being dismantled and shipped to the customer. The smaller cooler was shipped intact.

CO-28T
1666

# We're both in

# THE SAME BOAT!

What should a Dredge Pump User expect from the Manufacturer?

Just what are the obligations of a Manufacturer to his Customer? On this point, we at Thomas Foundries have a very definite policy.

We implicitly believe in the famous proverb of modern business that "the priceless ingredient of a product is the honor and integrity of him who makes it".

In obedience to that principle, we build the best pumps for Dredging and for Sand and Gravel that we know how to build. Sound engineering. Modern materials. But further than that — is our obligation to render SERVICE to our customers through the years.

SERVICE: Quick, dependable shipment of parts, when needed. No delays.

PARTS: Accurately made of highest quality materials. Complete stock of parts maintained for immediate shipment.

ENGINEERING HELP: Free consultation with Customers on operating problems. Our wide experience is frequently helpful.

This service policy partly stems from selfish motives. We and our Customers are in the same boat. We believe that what helps our Customers helps us. The Customers need efficient pumping and dependable services. Thomas Foundries needs satisfied Customers — pump users. This happy combination — first class product plus a sensible sales and service policy — is getting results. It is adding numerous new and *"repeat orders"*, Pump Customers.

*Thomas Durable Dredge Pump*

One, who has just bought his second Thomas Pump recently wrote us, "those who don't use Thomas Pumps don't know what they're missing". If you think you would like some of this kind of service, write to THOMAS FOUNDRIES, INC., P. O. BOX 1111, East Birmingham 1, Alabama.

# ALONE IN ITS CLASS for TOP CAPACITY!

# THE UNIVERSAL 880 SENIOR "R"

## BIG 1036 JAW CRUSHER

Famous Universal overhead eccentric force feed action and design for top capacity.

## BIG 4'x12' SCREEN

Full 48 square feet of screening area and inclined mounting for top capacity.

## BIG 3022 ROLL CRUSHER

Roller bearing star gear drive. Designed to use its full 22" width for top capacity.

## FIELD PROVED AND PORTABLE

Operators report tremendous capacities . . . fast and easy moves and setups. It's designed to meet state weight restrictions.

## BIG 30" CONVEYORS

Top capacity loads handled easily.

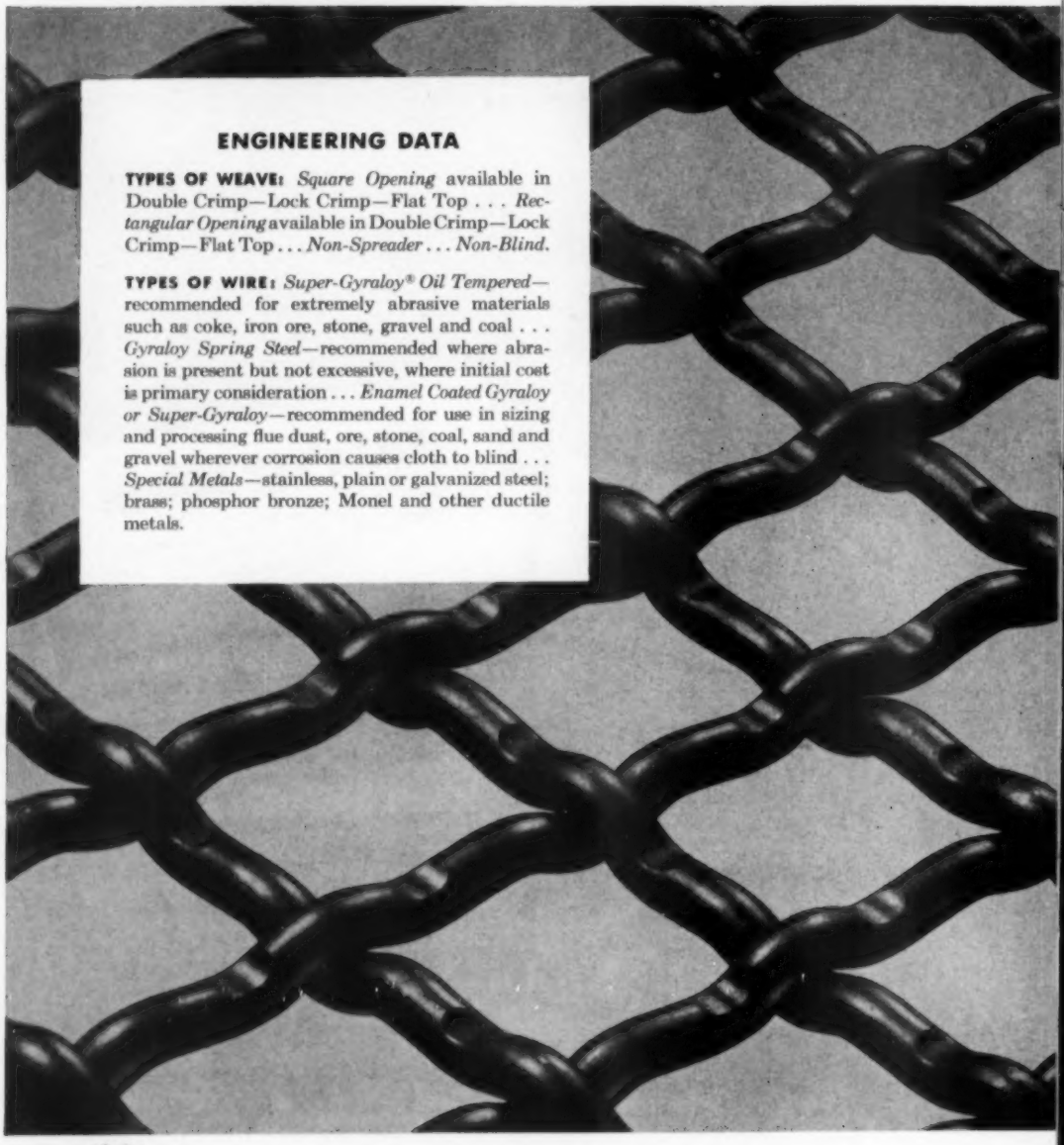
**Before you buy get full details on the new, advanced design Senior "R" Gravelmaster. See your Universal distributor or write for literature.**

**UNIVERSAL ENGINEERING CORPORATION** *Subsidiary of* **PETTIBONE MULLIKEN CORPORATION**

619 C Avenue N.W., Cedar Rapids, Iowa
Phone 7105

4700 West Division St., Chicago 51, Illinois
Phone Spaulding 2-9300

# We'll Give You Better



## ENGINEERING DATA

**TYPES OF WEAVE:** *Square Opening* available in Double Crimp—Lock Crimp—Flat Top . . . *Rectangular Opening* available in Double Crimp—Lock Crimp—Flat Top . . . *Non-Spreader* . . . *Non-Blind.*

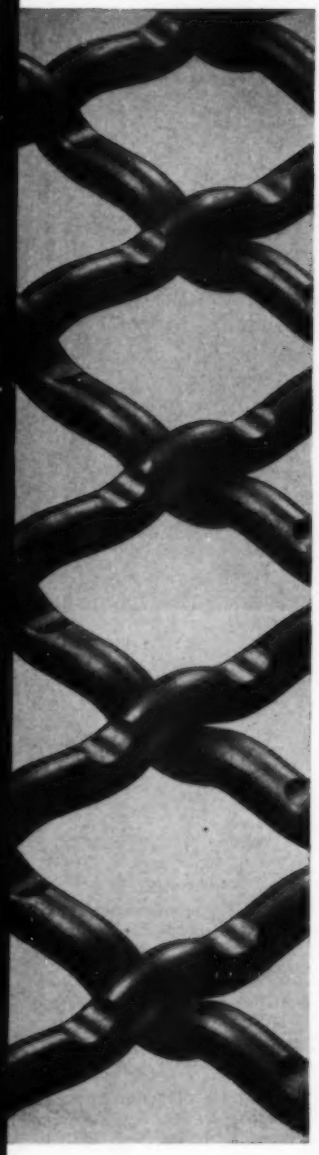
**TYPES OF WIRE:** *Super-Gyraloy® Oil Tempered*—recommended for extremely abrasive materials such as coke, iron ore, stone, gravel and coal . . . *Gyraloy Spring Steel*—recommended where abrasion is present but not excessive, where initial cost is primary consideration . . . *Enamel Coated Gyraloy or Super-Gyraloy*—recommended for use in sizing and processing flue dust, ore, stone, coal, sand and gravel wherever corrosion causes cloth to blind . . . *Special Metals*—stainless, plain or galvanized steel; brass; phosphor bronze; Monel and other ductile metals.

HEWITT-ROBINS INCORPORATED

**HEWITT-ROBINS**

**DIVISIONS: HEWITT RUBBER • ROBINS CONVEYORS • ROBINS ENGINEERS • RESTFOAM®**

# Screen Cloth Delivery



## *Increased Production Capacity Assures Faster Delivery For All Types Of Hewitt-Robins Screen Cloth*

Now, we can give you faster delivery—*direct from our own modern plant*—of the finest quality screen cloth to meet your every need . . . Screen Cloth that gives you longer life, greater satisfaction on any type of screen, regardless of make . . . Screen Cloth that will provide you with highest efficiency, lowest cost per ton.

For shorter delivery on any type of Hewitt-Robins screen cloth send us this information:

**1.** Type of screen—Name of manufacturer—Model of machine.

**2.** Kind of screen cloth desired: Specify type *weave*—type of *wire*.

**3.** Size of clear opening or mesh and wire diameter.

**4.** Type of edge formation: Flat edges — Welded — Reinforced hook strips.

**5.** Length and width of panels (width measured from outside to outside of bent hooks)—Height and length of hook strips—Degree of angle inside of hook.

**6.** For rectangular, non-spreader or non-blind openings: Specify direction of long slot (which dimension of cloth it parallels).

**7.** For dewatering decks: Size of openings in mm—Single, double or no depressions—Round or triangular profile stainless steel rods.

***WRITE FOR SCREEN CLOTH BULLETIN No. 113-A1***

√

**CHECK FOR INFORMATION ABOUT THESE JOB-TESTED PRODUCTS FOR YOUR OPERATION**

**CONVEYORS:**
- ☐ —Belt
- ☐ —Sectional
- ☐ —Mine
- ☐ —Shuttle
- ☐ —Vibrating

**BELTING:**
- *☐ —General Conveyor
- *☐ —Raynile®
- *☐ —Elevator
- ☐ —Woven Wire
- ☐ BUCKET ELEVATORS
- ☐ IDLERS

**SCREEN CLOTH:**
- ☐ —General
- ☐ —Electrically Heated

**VIBRATING SCREENS:**
- ☐ General
- ☐ Dewaterizers
- ☐ Heavy-Duty Scalpers
- ☐ Slip Lawn

**HOSE:**
- *☐ Twin-Weld®
- *☐ Servall®
- *☐ Fire
- *☐ Steam
- *☐ Air
- *☐ Water
- *☐ Pinch-Valve
- *☐ Flexible Rubber Pipe
- ☐ MECHANICAL FEEDERS
- ☐ STACKERS
- *☐ GROOVED PULLEY LAGGING
- ☐ SELF-UNLOADING BOATS
- ☐ DESIGN AND CONSTRUCTION OF COMPLETE MATERIALS HANDLING SYSTEMS

*For immediate information about these industrial rubber products, call your Hewitt Rubber Distributor. (See "Rubber Products" Classified Phone Book).

**Hewitt-Robins Incorporated**
**666 Glenbrook Road**
**Stamford, Connecticut**

NAME

TITLE & COMPANY

STREET ADDRESS

CITY  PO ZONE  STATE

# INCORPORATED

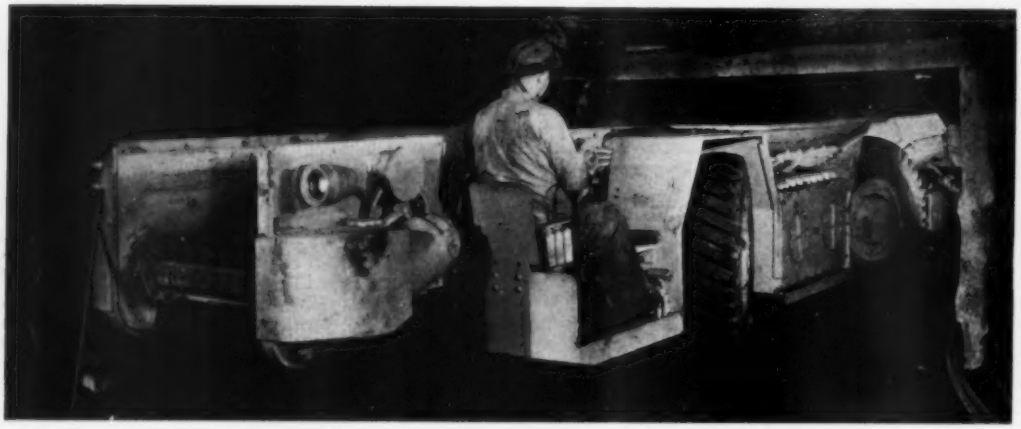
EXECUTIVE OFFICES: STAMFORD, CONNECTICUT

**Buy Safe!** Don't gamble

on just any shuttle car cable—

you may lose

One break is trouble enough. Frequent breaks prove your cable faulty. Down time and repair losses soon mount higher than original cable costs. It's just common sense to buy the best in the beginning.



for longer "break-free" service insist on

This is AnacondA Securityflex Shuttle Car Cable. Note patented breaker strip and D-shaped insulation to prevent overriding. No other cable offers these plus features.



## Cold Rubber Insulated **Securityflex**

Almost any cable looks good when new. It's *service* that counts. ANACONDA Securityflex* portable power cable serves well through many, many hours of tough, rough use. There's a good reason why.

Cold rubber insulation – an ANACONDA First – is 50% more resistant to moisture than regular rubber. Special-strength neoprene jacket takes abrasion, heat, rockfall, and run-overs in stride where other types fail.

Securityflex functions nicely. Under reel tension, over guides, and in frequent sharp bends, it doesn't fatigue readily. It won't override, kink, or twist.

This ANACONDA Cable is safe—a look at the patented "anti-short" breaker strip and D-shaped insulation tells why. This is *plus* protection.

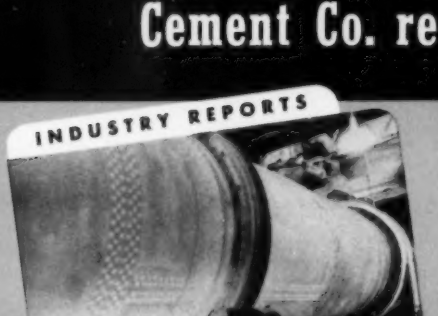
Write your nearest Anaconda Sales Office or Distributor for more information. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

*Trademark

**the right cable for the job** ANACONDA® **wire and cable**

# Petoskey Portland Cement Co. reports TSP* trunnions outlast them all!

INDUSTRY REPORTS



Excerpt from letter, Petoskey Portland Cement Co.,

"...on our #1 kiln we ran one (TSP Trunnion) 7 years and one 8 years before replacing bearing...on # 2 kiln we ran one 12 years and one 11 years...on #3 kiln, 6 years, 7 years and 8 years...on #4 kiln, 10 years and 8 years...also good results with both TSP rolls and shafts..."

Petoskey Portland began installing "Tool Steel Process" Trunnions in 1940, completed installation on all 4 kilns by 1943. None has worn out to date. Eighteen TSP Trunnions are now in use. In addition to their long service life, they have been instrumental in smoothing the surface of the large tires.

TSP Shafts installed with these TSP Trunnions are showing the same phenomenal results. Prior to the installation of TSP Shafts, bearings had to be renewed every 2 years.

Next time you need replacement parts, specify "Tool Steel Process" parts. Savings in material, man hours and downtime will prove to you TSP superiority, as it has to hundreds of companies.

* TOOL STEEL PROCESS PRODUCTS

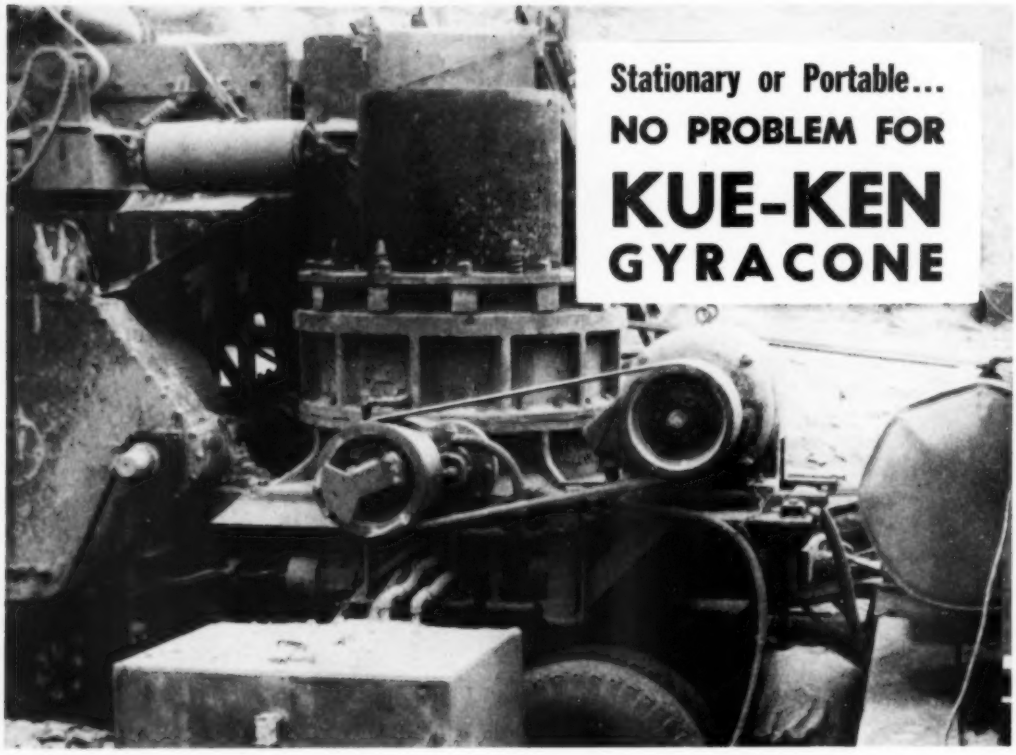
...the products that carry an absolutely positive GUARANTEE to give a longer life in the same service than any other product.

THE TOOL STEEL GEAR AND PINION CO.

CINCINNATI 16, OHIO, U. S. A.

AD 83

THE STANDARD OF QUALITY SINCE 1909 FOR GEARS • PINIONS • ROLLS • WHEELS AND OTHER HARDENED PRODUCTS



## Stationary or Portable... NO PROBLEM FOR KUE-KEN GYRACONE

Whether your crushing plant is stationary or portable, you'll find there's no problem about fitting a KUE-KEN Gyracone into the flow sheet. For example, using a portable roll crushing and screening plant, an Idaho contractor recently had trouble crushing basalt to ¾" in the required quantities of 100 to 125 tons per hour. Due to the toughness of the rock this capacity could not be met without causing excessive wear on the rolls. The obvious solution was to install a secondary crusher, but a difficulty arose in the fact that ordinary gyratories required too much headroom. A 36" KUE-KEN GYRACONE, requiring the lowest headroom of any gyratory available solved the problem. The KUE-KEN fit easily into his flow sheet, enabling the required capacity to be met, and eliminating excessive wear on the rolls. This report is only one of many that we are constantly receiving, proving time and again KUE-KEN's ability to solve a tough problem in the field.

No matter how tough your own crushing problem, the chances are that our engineering department will be able to help you solve it. It will pay you to investigate today.

***See your dealer or write for factual illustrated data.***

KUE-KEN pronounced "QUE-KEN"
U. S. and foreign patents pending

DEALERS: LUND MACHINERY CO., Salt Lake City, Utah; CLOSNER EQUIPMENT CO., San Antonio, Texas; WASHINGTON MACHINERY & STORAGE CO., Seattle, Wash.; CONSTRUCTION EQUIPMENT CO., Spokane, Wash.; EDWARD L. KROPF CO., Portland, Ore.; CAL-ORE MACHINERY CO., Medford, Ore.; MILLER MACHINERY CO., Missoula, Mont.; ANAHUAC MACHINERY CO., Mexico City, Mexico; UNIVERSAL EQUIPMENT CO., Vancouver, B. C.

640 CHESTNUT STREET • OAKLAND 20, CALIF.

**STRAUB MFG. CO.**

| | | |
|---|---|---|
| Kue-Ken Balanced Crushers | Rib Cone Ball Mills | Overflow Classifiers |
| Kue-Ken Simplex Crushers | Concentrating Tables | Feeders |
| Kue-Ken Gyratory Crushers | Overhead Eccentric Crushers | Screenwheel Classifiers |

**Pennsylvania Crusher Co.,** Exclusive Licensed Eastern Manufacturer and Distributor, Broad and Arch Streets, Philadelphia, Pennsylvania.

**Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd.,** Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.

# It's incredible!

## ...the commodities that go into a BAGPAK bag

Polystyrene—Feeds—Calcium Chloride—Salt—Ammonium Nitrate—Cement—Rosin—Fertilizers—Sugar—Flour—Insecticides—Fine Chemicals—Clays—Rock Wool—and over 400 other products costing from less than a cent a pound to over a dollar a pound are being packed in Bagpak Multiwall Paper Bags.

Bagpak also furnishes Bag Closing Machines. For details about bags and machines write to Bagpak Division, International Paper Company, 220 East 42nd St., New York 17, Dept. T-7

For further data, Write No. 2221 on Inquiry Card Page 35

**International Paper** COMPANY

BAGPAK DIVISION

BRANCH OFFICES: Atlanta · Baltimore · Baxter Springs, Kansas · Boston · Chicago · Cleveland · Denver · Detroit · Kansas City, Kansas · Los Angeles · New Orleans · Philadelphia · Pittsburgh · St. Louis · San Francisco · IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto

# THINK BIG...

## WHEN YOU THINK CRUSHING AND SCREENING

# THINK CEDARAPIDS...

# ON EVERY JOB!

YOU aggregate producers are in a business where you have to think *big* in terms of the production and performance of your equipment. It just naturally leads to "thinking Cedarapids" for every job, because Cedarapids equipment is designed by construction men *for* construction men. Cedarapids engineers know the problems of the field because they're in the field finding out what it takes to keep ahead of changing conditions and methods, and meet the demands of constantly increasing production. They know *you* have to make money to stay in business . . . so they devote every effort toward designing types and sizes of equipment to meet your specific requirements at the low operating and maintenance costs that give you a definite advantage in competitive bidding as well as a comfortable profit.

Whether your next job is large or small, easy or difficult, it will pay you to get complete details about the Cedarapids equipment that helps you *think big*. Your Cedarapids distributor will gladly recommend the equipment that gets the best results for you, at the lowest cost . . . call him today for facts and figures.

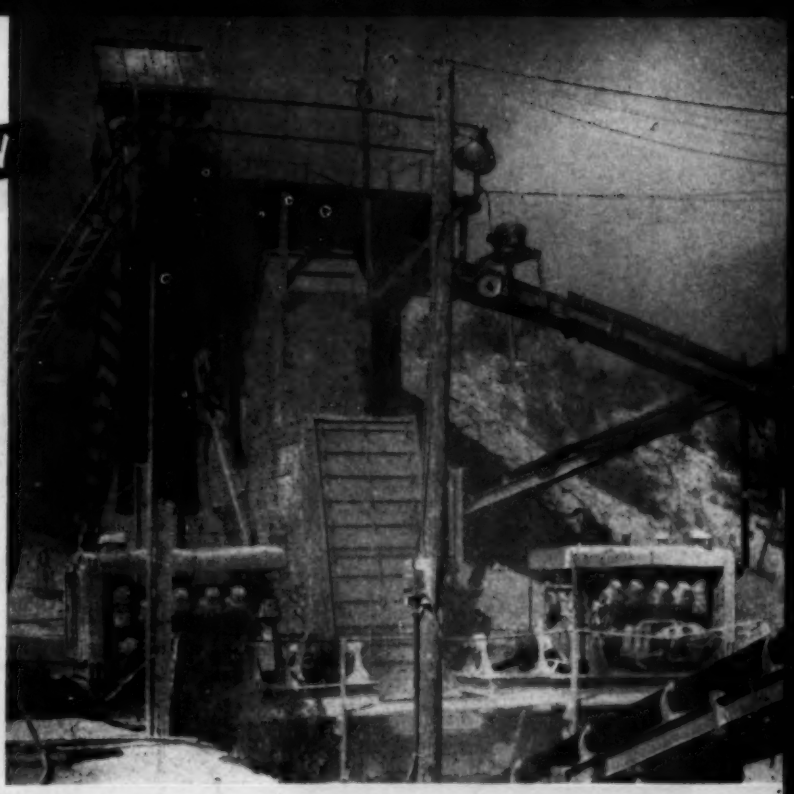
**IOWA MANUFACTURING COMPANY**
**Cedar Rapids, Iowa, U.S.A.**

## BIG PERFORMANCE

The Cedarapids "Rock-It" is a two-in-one unit that reduces 22" stone down to road stone or aglime in one operation. Capacity? Aurora Limestone Products, of Aurora, Iowa, averaged a consistent 100 tons per hour on a 50,000 ton road stone job. Their "Rock-It" has produced 100 tons per hour and also 120 tons per hour on different jobs to keep well ahead of schedule.

For crushing gravel, "Rock-It" Plants are now available with a 3018 Roll Crusher, in place of the 3033 or 2033 Hammermill, if desired. Your Cedarapids distributor can help you select the right crusher for your requirements.

# BIG PRODUCTION



Cedarapids Double Impeller Impact Breakers can't be beat when it comes to hanging up tremendous daily tonnage records. Concrete Materials and Construction Company, using a Model 5050, *averaged* 600 tons per hour and hit a peak day's production record of 14,472 tons on their New Jersey Turnpike contract.

Using a Model 2020, Western Indiana Gravel Company worked an "impossible" pit and made money. Their problem was to produce gravel with 75% crushed particles in a pit containing 19% soft stone, several seams of conglomerate, with most of the gravel in the 1" to 1½" range, and very little plus 5".

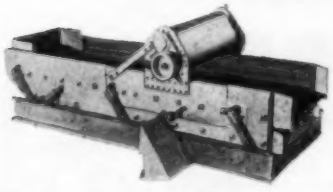
For big volume of cubical shaped aggregate, for extremely low-cost operation, and for profitable production under tough conditions, be sure you investigate the advantages of Double Impeller Impact Breakers. Ask about the new *portable* plant.

# BIG PROFIT

Ask Reno Construction Company about Cedarapids Unitized Plants . . . they own six of them! They can depend on average hourly production of 150 tons from each plant . . . or they can combine the four basic units of the Unitized Plants in a number of different ways to meet specifications for every size products on other jobs.

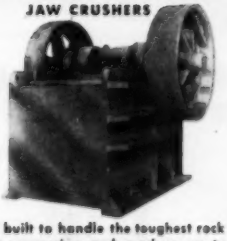
Talk to B. L. Anderson of Cedar Rapids, Iowa. One of his three Unitized Plants is turning out 4 products at a time at a 210 ton per hour clip. That's "thinking big" about production.

**HORIZONTAL VIBRATING SCREENS**



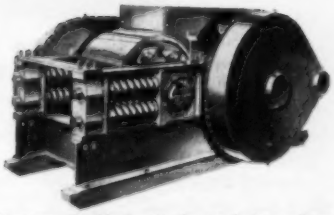
*More efficient horizontal screening action, highly accurate gradation and large capacity combine to give you faster and more profitable screening at lower cost. Sizes range from 3' x 8' to 4' x 14' in double or triple deck styles.*

**JAW CRUSHERS**



*They're built to handle the toughest rock without pampering and produce up to 500 tons per hour at low cost! Available in 6" x 12" to 32" x 40" sizes in plain or roller bearing models. Ask about Twin Jaw Crushers for even higher capacities.*

**ROLL CRUSHERS**



*Here are the ideal units for producing a large volume of smaller sized aggregates. Seven sizes (from 16" x 16" to 40" x 24") available with two smooth or two corrugated roll shells, or one of each, depending on the product desired.*

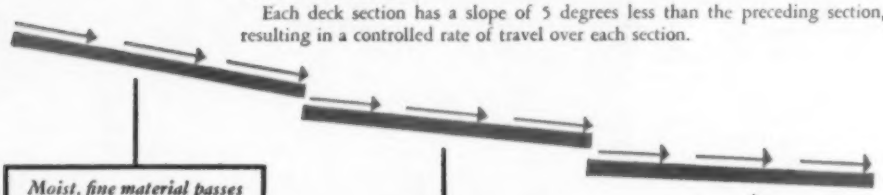
Ripl-Flo SCREEN with Tri-Slope DECK

# SCREENS

## Moist Fine Material

**No excessive blinding** and no shutdowns to clear the screen! With the "Tri-Slope" deck you can screen moist ½ x 0 to ¼ x 0 granular materials having high surface moisture. And you'll get more capacity than with a single slope deck of the same area.

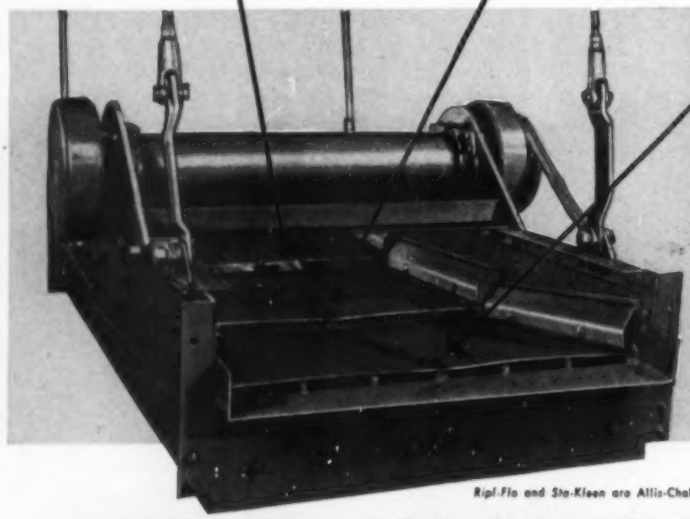
Each deck section has a slope of 5 degrees less than the preceding section, resulting in a controlled rate of travel over each section.



*Moist, fine material passes rapidly over the feed end section to reduce the depth of the bed.*

*It is then retarded on the intermediate deck to maintain proper bed depth.*

*It is slowed down still more on the discharge end section to pass marginal size particles.*



**Each section** of the "Tri-Slope" deck is designed for rapid stratification of the bed, resulting in high capacity. Moist, clogging particles are dislodged by the *Sta-Kleen* feature, consisting of bouncing rubber balls between the screen cloth and a ball retaining deck. The A-C representative in your area will gladly give you more details. Call him, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-3993

*Ripl-Flo and Sta-Kleen are Allis-Chalmers trademarks.*

# ALLIS-CHALMERS

A-C ALLIS-CHALMERS

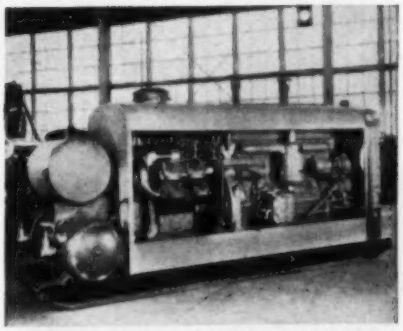
**Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.**

Hammermills | Vibrating Screens | Jaw Crushers | Gyratory Crushers | Grinding Mills | Kilns, Coolers, Dryers

# "AIR POWER" by MURPHY DIESEL

**rugged, reliable, responsive**

GARDNER-DENVER truck mounted compressor powered by a Murphy Diesel.



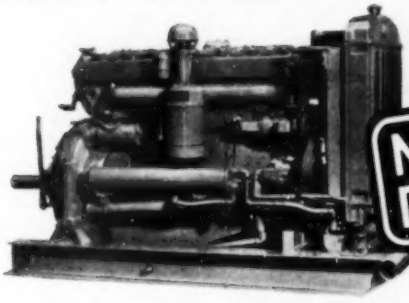
INGERSOLL-RAND semi-portable compressor powered by a Murphy Diesel.

JAEGER portable powered by a Murphy Diesel.

JOY stationary compressor powered by a Murphy Diesel.

LE ROI portable compressor powered by a Murphy Diesel.

WORTHINGTON portable compressor powered by a Murphy Diesel.



MURPHY DIESEL

**MURPHY DIESEL COMPANY**

5307 W. Burnham St. Milwaukee 14, Wisconsin

254 A

## *Heavy duty power* for rock crushing

Murphy Diesel engines and power units are available in sizes from 90 to 226 H.P. Engine speeds are 1200 and 1400 rpm. Also available are dual-fuel engines, crude oil burning engines and altitude engines which will maintain sea level ratings up to 9000 ft. "Packaged" generating units are available with capacities ranging from 60 to 140 K.W. A.C. or D.C. voltages to suit your requirements.

THE First

AND STILL THE FINEST BEARING OF ITS KIND

CONCAVEX DESIGN GIVES YOU BEARINGS THAT

Originated by Shafer over 3 decades ago, ConCaVex is still the "years ahead" design in roller type bearings. It has met all challenges—shown all industry what the words "anti-friction-efficiency" really means!

This basically superior ConCaVex design combines in one bearing the distinct structural and operational advantages of both ball and roller type bearings. Installed in your product or your plant equipment Shafer ConCaVex Bearings will improve your ability to produce a quality product more efficiently at less cost. Ask for full information and engineering assistance. No obligation.

SHAFER BEARING CORPORATION
801 BURLINGTON AVENUE
Downers Grove, Ill.

ARE COMPACT AND STRONG

HAVE RESERVE CAPACITY FOR SHOCK LOADS

SHAFER

SELF-ALIGNING
ROLLER BEARINGS
INDUSTRIAL • AIRCRAFT

HAVE AUTOMATIC SELF-ALIGNMENT

WITHSTAND GREATER THRUST LOADS

STAY STRONGER YEARS LONGER

CARRY RADIAL-THRUST LOADS IN ANY COMBINATION

NO SCOOPING

NO SEWING

NO TIEING

CUT BAG PACKING COSTS

AUGER-MATIC

Bag Packer

Quickly fills self-closing bags to the desired weight. Saves time in filling and eliminates need for sewing or other expensive bag closing equipment.

The AUGER-MATIC Bag Packer has a multi-twist auger which can quickly be changed to pack any material from powder to pellets.

AUGER-MATIC Packing reduces dirt and waste . . . a time and labor saver. Packer can easily be moved from one filling point to another.

*Send for descriptive literature.*

E. D. CODDINGTON MFG. CO.
[illegible] NORTH 17TH STREET • MILWAUKEE 9, WISCONSIN

# bouncing rubber balls

## help speed production of agricultural limestone at Krueger Quarry

**On the** Ball Tray Deck of this 4' x 12' Double Deck SIMPLICITY Screen at the Krueger Quarry in Winchester, Illinois, bouncing rubber balls team up with SIMPLICITY's unique gyrating action to produce agricultural limestone at the rate of 60 tons per hour. Production goes along without interruption because the lively rubber balls, bouncing in compartments on the lower deck, prevent build-up of the soft limestone and keep it from blinding the 5/32" screen even when the material is damp.

**SIMPLICITY** Ball Tray Deck Screens like this one at the Krueger Quarry can do a better job of processing damp, sticky material for you. Other SIMPLICITY Screens with single, double or triple decks can help speed production and cut the costs of all your screening operations. For complete information, consult a SIMPLICITY sales engineer or write us today.

123

**Sales representatives in all parts of the U.S.A.**

**FOR CANADA:** Canadian Bridge Engineering Co., Ltd., Walkerville, Ontario

**FOR EXPORT:** Brown and Sites, 50 Church Street, New York 7, N. Y.

**Simplicity**
TRADE MARK REGISTERED

**ENGINEERING COMPANY • DURAND, MICHIGAN**

# RAYMOND ROLLER MILLS for

THE Raymond line of Roller Mills includes a full range of sizes and types of units to meet the varied requirements of the non-metallics industry:—Capacities from a few tons up to 30 tons or more per hour . . . Fineneases from 20 mesh to 400 mesh materials.

Over sixty years of continuous development are responsible for Raymond leadership in advanced design and automatic operating features, record economy in production and maintenance, as well as long, dependable service.

The Whizzer Separator provides utmost flexibility and ease of adjustment for fineness control, and also insures particle size uniformity of finished product.

The Pneumatic Feed Control is a production booster that maintains a maximum "load" on the mill and keeps it operating at peak capacity by preventing underfeeding or overfeeding.

Raymond oil journals and efficient lubrication system, the high grade bearings and heavy duty construction, all help to keep down overall costs and show a consistent low ratio of power consumption to tonnage output.

*Write for Roller Mill Catalog No. 69*

## RAYMOND SUPER ROLLER MILL

Available in the larger sizes for delivering 15, 20, 30 or more tons per hour of finished material classified by air separation. These big units save space, centralize equipment, simplify material handling and eliminate multiple maintenance and supervision expense.

RAYMOND SUPER ROLLER MILL
Shown with two automatic feeders and Whizzer Separator with independent drive unit.

# COMBUSTION ENGINEERING

*Refer your grinding problems to Raymond engineers to insure proper equipment for your job.*

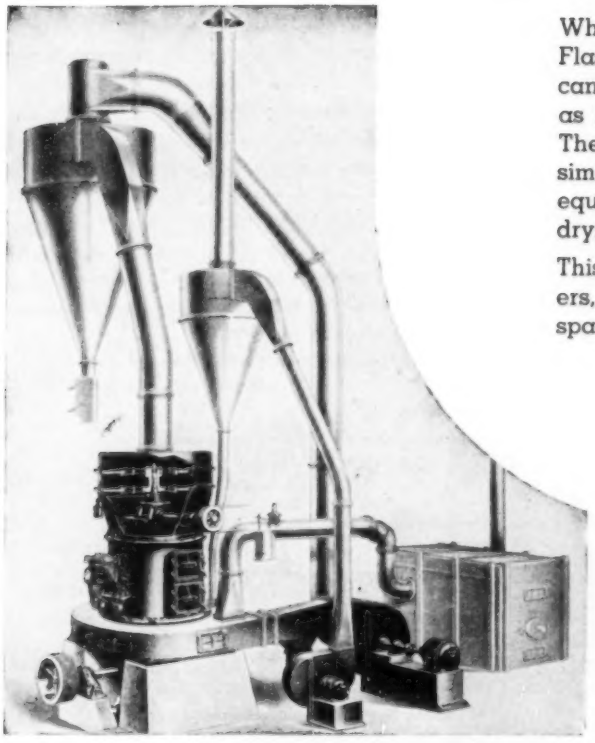
**Raymond Pulverizer Division**

**ECONOMICAL PRODUCTION of GYPSUM BARYTES PHOSPHATE ROCK LIMESTONE PRODUCTS and other Non-Metallics**

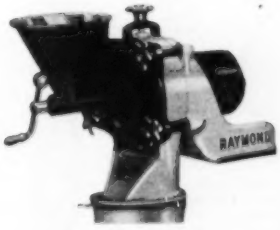
## RAYMOND ROLLER MILL WITH *Flash* DRYING

When equipped with the Raymond Flash Drying System, the Roller Mill can handle materials which contain as high as 10% to 15% of moisture. The material is dried and pulverized simultaneously in a single unit of equipment, and the mill delivers a fine, dry, free-flowing product.

This method eliminates separate dryers, shortens process time, saves plant space and reduces cost of production.



*Raymond High Side Roller Mill with Whizzer Separator, fully equipped with Flash Drying Accessories for drying and pulverizing in one operation.*

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**VOL. 45 MARCH 1953 No. 9**

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in

## PUNISHING SERVICE

### ...by More Plants for More Kilns

B&W ALLOY NOSE-RING CASTINGS are establishing a record of fast-growing acceptance by cement plants across the country and abroad. Recent installations have increased the total to 189 sets—or 7062 pieces—now in operation on the discharge end of rotary kilns in leading cement, lime, and dolomite plants.

Sparking this acceptance trend are important cost-saving features characteristic of these light and strong B&W Castings, resulting in improved kiln performance. These features include:

- Longer brick life and continuous operation by elimination of kiln shell "belling."
- "Feathering-down" of end of kiln shell due to oxidation is overcome, since shell is protected from direct flame.
- Low installation cost, due to small size and light weight of B&W Castings.
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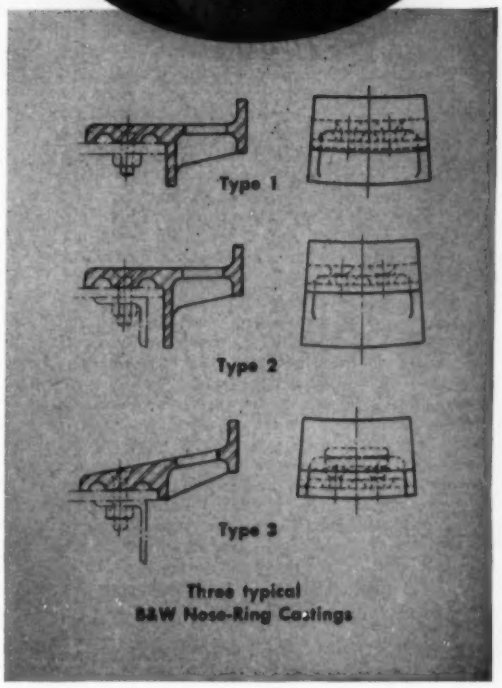
- Spare part inventory reduced as same casting will fit kilns varying up to two feet in diameter.




Three typical
B&W Nose-Ring Castings

*Write for Bulletin SDM-12.*
*The Babcock & Wilcox Company,*
*Process Equipment Dept.,*
*Barberton, Ohio.*

BABCOCK & WILCOX

S-420

# editorial

## *Production At Any Age*

A TRAGIC consequence of the wave of social legislation and social consciousness which has swept over this country in the past few decades is the enforced retirement of workers at a certain age. Even in companies which have no retirement plans for their employees there is a decided reluctance to let a man continue to work after he has passed this age. As a result many men are being forced into retirement who are still able to carry on the same work they have been doing. Others are well able to do lighter and less exacting work. This has always been a problem but its importance has become increasingly apparent in recent years.

The injustice that is being done to many of these workers is not so much financial as it is psychological. Most men, whether they admit it or not, take great pride in their work and in their ability to hold down a job. Being retired is to many of them almost as bad as being fired, the implication in both cases being that they are not able to hold down a job. To many men, especially those who have worked hardest and taken the greatest pride in their work, retirement is actually a death sentence. This is just as true of skilled and unskilled labor as it is of white-collar workers and executives. We all know of cases among our friends, relatives or co-workers where men who were seemingly in the best of health up to the date of their retirement deteriorated rapidly and died within a comparatively short time.

The humanitarian procedure would seem to be to retire only those workers wanting to retire and the comparatively few who are obviously incapable, at retirement age, of holding down even the easiest jobs in an organization. The men in the first category are obviously financially independent; the others will all receive Social Security benefits, and many of them will also have company pensions to supplement their savings. The workers who are able to work, and who, for financial or other reasons, want to keep on working should be allowed to do so, in the same jobs if possible. Such workers will not only be loyal and dependable; they will also improve the morale of other workers. Every company has jobs where experience and dependability are the primary requisites, rather than the actual amount of hard work done, and older men would fit into these jobs perfectly.

THERE has been much criticism in this column and elsewhere about waste and extravagance in government, some of it aimed at the many bureaus for nearly everything, and the vast tonnages of literature they pour forth on every conceivable subject. Much of this literature is not worth its cost, but much of it also is extremely valuable as it contains important information not available from any other source. A veritable stream of such literature pours over our desk and much of it ends up in the waste-basket. Many items are retained however and among these is a series of four booklets recently received from the Health Resources Advisory Committee, Office of Defense Mobilization. These are entitled "Production At Any Age", "The Disabled Can Work", "The Worker And His Health", and "A Job For Women". Each of these booklets, unlike most government releases, is brief, but complete and informative. Each gives convincing arguments and sound statistics to substantiate its aims. Each, we hope, is being circulated widely and quoted freely in order to have the maximum effect upon the conditions it is intended to correct.

In the first-mentioned booklet it is pointed out that, while older people have a need for regular productive activity, for pay checks, and for a feeling of independence—industry, the community, and the nation also have a stake in the usefulness and economic productivity of older persons. With the increasing percentage of people in the over-age group who are forced to become non-productive and dependent on others our present high standard of living can be seriously affected. The trend toward longer educational preparation is making young people dependent for a longer period of time and delaying their entry into gainful work. This, combined with enforced retirement at a specified time, will further shorten their working spans and further intensify this problem.

SPACE does not permit quoting at length from this booklet but we will attempt to present some of the most important facts and statements. It is clearly shown that the age makeup of our population is changing and that our concept of age must change with it. Our way of living is steadily increasing our life span, and the period during which we are able to do productive work is expanding with it. Older workers, it is stated, are more experienced, have fewer outside distractions, are more conscientious, have less wastage, and often are as productive as young workers. Statistics also show older workers perform safely; they are less likely to have accidents than the younger worker, they are absent less frequently for other reasons, and they are much less likely to quit—an important factor in this day of high labor turnover.

The content and aims of this booklet are summarized as follows: "Stripped of erroneous impressions, employment of the older worker actually represents the reaping of maturity's harvest. In the older-worker group there is a reservoir of training, experience, and judgment, on which industry and the community can draw to mutual benefit. Industry can help to utilize this growing source of manpower through improved job analysis, counseling, and selective procedures, matching the job requirements to the physical, mental, and emotional capacities of the older worker. Through preventive services in in-plant health programs, the health and productivity of the older-worker group, a growing segment of the gainfully-employed population, can be effectively maintained."

Walter E. Trauffer

# SMIDTH

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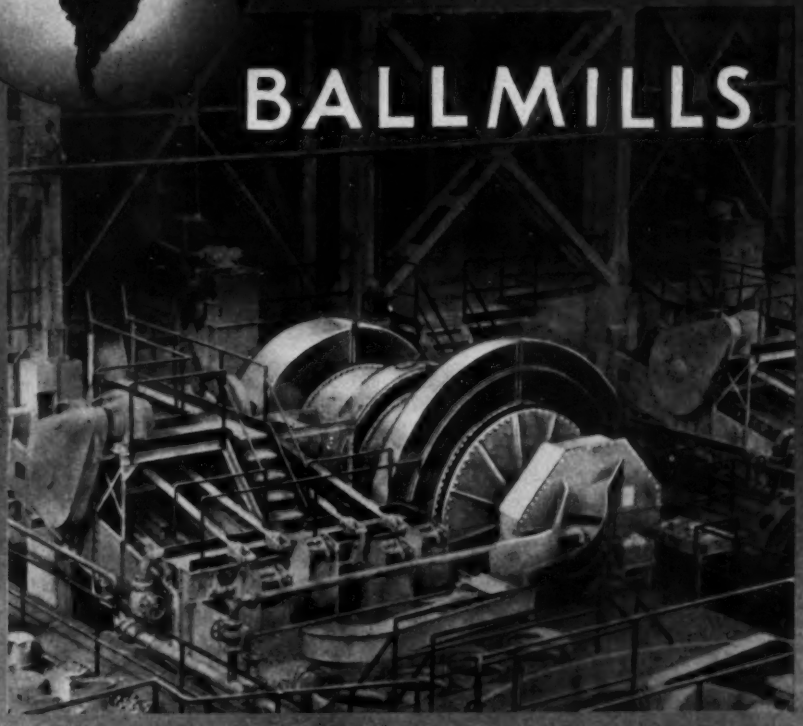

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# This 'Dozer *Pays* its way

*A D2 Tractor with Cat No. 2S Bulldozer stockpiles shot sand at Cowell, Calif. Also shown is Mr. Charles Laws, the owner.*

ANY Caterpillar Bulldozer will keep busy and more than earn its keep on a sand-pit or quarry operation. This D2-No. 2S 'Dozer, owned by Charles Laws, of Concord, California, is no exception.

Smallest bulldozer unit in the Caterpillar line, the D2-No. 2S is built with the same rugged strength and powered by the same type of dependable Caterpillar Engine as its big brothers. That's why Mr. Laws bought it. He had had experience with Caterpillar track-type Tractors on a logging show and knew what they could do.

This particular unit is used for stockpiling shot sand and stripping light overburden. But the D2 'Dozer is an excellent tool for other jobs, such as feeding the loader and building access roads. It's a quick, sure-footed machine, easy to handle. And because it uses low-cost No. 2 furnace fuel without fouling, and stays on the job without tinkering, its operating economy is outstanding.

Your Caterpillar Dealer has a complete line of sturdy Cat Bulldozers, matched to all tractor sizes. He'll be glad to demonstrate the unit you need. And he'll back its long work life with reliable service and genuine Caterpillar parts. See him now.

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# news of the industry

PIT AND QUARRY

## Basic Refractories, Inc. Plans $400,000 Expansion At Gabbs, Nev., Plant

Basic Refractories, Inc., plans a $400,000 expansion at its Gabbs, Nev., magnesite plant, it was announced when the company revealed a $1 million stock issue.

The prospectus stated that the "improvements involve conversion of the present preparation, feed, and blending systems from wet processes to dry, and the installation of efficient dust collecting equipment, the final stage for processing the kiln feed in the form of briquettes, as distinguished from the finely pulverized material now used."

Investors Diversified Services plans purchase of all 10,000 shares of the preferred stock at $100 per share and has options to buy at $10 per share about 30,000 shares of common stock. The Metropolitan Life Insurance Company has options to buy 12,600 shares at $10 per share. Basic is arranging mortgage notes with several banks and Metropolitan Life.

## A.S.T.M. Meeting to Discuss Aggregate Tests

The Annual Meeting of the American Society for Testing Materials will be held in Atlantic City from June 28 through July 3, 1953.

The final program has not been announced but plans are being made for several sessions on concrete and concrete aggregate. One of the sessions is expected to deal with the significance of tests on these materials.

## Haydite to Be Produced At 14th Texas Industries Plant

Haydite lightweight aggregate will be made soon at a new plant in Oklahoma City, Okla., according to Ralph B. Rogers, president of Texas Industries, Inc., of Dallas. Construction is scheduled to begin in the immediate future, and operation is expected to be under way by early summer.

Altogether, including the firm's other lightweight aggregate plants, lightweight concrete masonry operations, and ready-mix plants, Texas Industries will have 14 installations when the Oklahoma City facilities are opened. At present there are aggregate plants in Dallas, Eastland, Stafford, and Rosenberg, Tex., and Alexandria, La.

Officers of the corporation, in addition to Mr. Rogers, are as follows: A. J. Clark, vice-president in charge of block plant operations; Cedric Willson, vice-president in charge of engineering; A. R. McVoy, vice-president in charge of aggregate plant operation; Orville Erringer, vice-president; Charles Marshall, vice-president and assistant to the president; R. E. Kibbe Jr., treasurer; H. B. Pressley Jr., secretary; and J. R. Skiles, assistant secretary-treasurer. Indicative of the growth of the concern is a comparison of sales in 1949-50—$217,000—with the figure for 1951-52, which was $3,807,000.

## Acting Regional Director Named by Mines Bureau

Alton Gabriel, technologist and administrator with the Bureau of Mines, United States Department of the Interior for more than 20 years, has been named acting regional director of the Bureau's Region VII, the Southeast. Dr. Gabriel replaces the former regional director, Hewitt Wilson, who died recently.

Region VII, with headquarters at Norris, Tenn., covers Tennessee, North and South Carolina, Georgia, Alabama, Mississippi, and Florida.

### Coming Events

*March 19 and 20, 1953—Indianapolis.* Annual meeting and convention, Indiana Mineral Aggregates Association. Claypool Hotel.

*June 28-July 3, 1953 — Atlantic City.* Annual meeting, American Society for Testing Materials. Chalfonte-Haddon Hall.

## Price Decontrol Order Covers Many Materials And Operating Equipment

General Order Overriding Regulation 9, Amendment 41, issued by the Office of Price Stabilization, Economic Stabilization Agency, effective February 18, 1953, has decontrolled prices on many products related to the nonmetallic mining and concrete industries.

The following items and materials are included: cement (all types); masonry units (all sizes of blocks, bricks, and slabs); ready-mixed concrete; crushed stone (ballast, metallurgical, and chemical); gravel (ballast, roofing, and filter); sand (all types, including aggregate and industrial); slag; stone (rough rubble, riprap, flagging, fluxing, etc.).

In addition to the above, the following types of equipment used in the nonmetallic mining and concrete manufacturing industries are covered by the order:

Crushing, pulverizing, classifying, and washing machinery and equipment for storing and handling rock, sand, and gravel products.

Excavating and earth-moving machinery, including power cranes and shovels, draglines, clamshells, hoes, buckets, dredging machinery, ditchers, scrapers, rippers, elevating and blade graders, and all types of off-highway hauling equipment, including attachments and related equipment.

Conveyors and conveying systems, industrial, including portable conveyors.

Dust-collecting equipment, industrial, portable and stationary, including industrial vacuum cleaners.

Materials-handling equipment, excluding on-the-highway automotive vehicles.

Mining and quarrying machinery, including mine cars and trucks.

Ore-crushing and concentrating machinery.

---

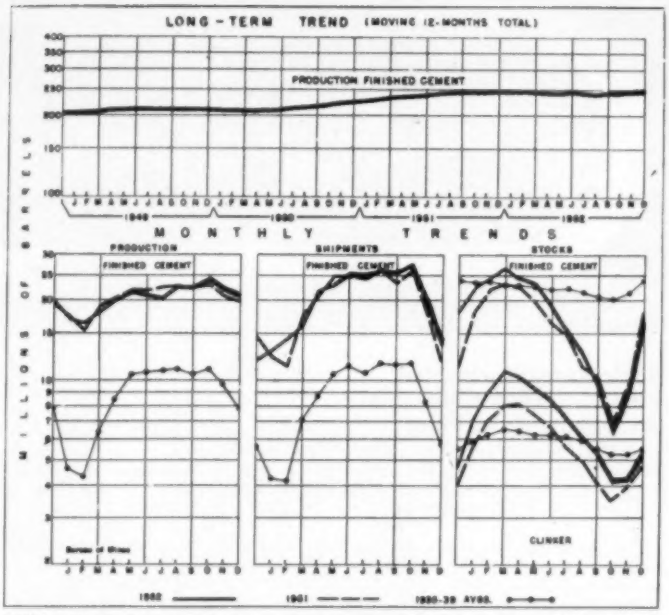
Net profit of the Canada Cement Company, Toronto, Ont., fell off $759,654, or about 16 percent, in the year ending November 30, 1952, according to J. M. Breen, president. Profit was $4,044,944, compared with $4,804,645 during the same period a year ago. Profit per share amounted to $4.62, against $5.88 in 1951.

## Officers, Directors Named At A.R.B.A. Convention—Reindollar New President

Robert M. Reindollar, consulting engineer of Baltimore, Md., was elected president of the American Road Builders' Association at its convention held in Boston, Mass., from February 9 to 11, 1953. Mr. Reindollar has been connected with the State Roads Commission of Maryland for 40 years. He was appointed chairman of the commission in 1945, a position he held until a change of administration in 1951. Mr. Reindollar succeeds Paul B. Reinhold, president of the Atlas Equipment Company, Pittsburgh, Pa., who had been president for two terms.

The four regional vice-presidents elected at this meeting include Charles M. Noble, chief engineer, New Jersey Turnpike Authority, Trenton, N. J., for the Northwestern District; W. G. Pruett, highway director, Alabama State Highway Department, Montgomery, Ala., Southern District; Julien R. Steelman, president, Koehring Company, Milwaukee, Wis., Central District; and Harmer E. Davis, director, Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif., Western District. Jennings Randolph, assistant to the president of Capital Airlines, Washington, D. C., was re-elected as treasurer. The executive committee will be appointed by the new president.

The following were elected as directors for the term expiring in 1956: H. L. Aitken, state engineer, Bureau of Highways, Nebraska Department of Roads and Irrigation, Lincoln, Nebr.; J. L. Cohill, assistant to the president, Firestone Tire and Rubber Co., Akron, Ohio; Ben T. Collier, state aid engineer, Mississippi State Highway Department, Jackson, Miss.; Troy M. Deal Sr., Square Deal Machinery and Supply Co., Orlando, Fla.; A. T. Goldbeck, engineer-director, National Crushed Stone Association, Washington, D. C.; L. W. Lamb, contractor, Holland, Mich.; Frederick Salditt, vice-president, Harnischfeger Corporation, Milwaukee, Wis.




SUMMARY—Production of finished portland cement in December, 1952, totaled 20,881,000 barrels, as reported to the U. S. Bureau of Mines—a 5 percent increase over the December, 1951, figure. Mill shipments totaled 13,740,000 barrels—an increase of 17 percent over shipments in December, 1951, while stocks of 15,964,000 barrels of finished portland cement on hand December 31 were 11 percent lower than those at the end of the preceding year. Clinker production during the month totaled 22,020,000 barrels—6 percent more than in December, 1951.

PRODUCTION—One hundred and fifty-six (156) plants located in 37 states and Puerto Rico reported a production of 20,881,000 barrels of finished portland cement during the month, as compared to 153 plants, which manufactured 19,874,000 barrels in December, 1951. Clinker production during the month totaled 22,020,000 barrels, as compared to 20,780,000 barrels in the previous December.

SHIPMENTS—Mill shipments of finished portland cement were 17 percent higher than in December, 1951, and totaled 13,740,000 barrels. Shipments were greater in 16 districts and lower in 3 districts, as compared to shipments in December, 1951. The percentage changes ranged from a 49 percent increase in the Virginia-Georgia-Florida-Louisiana-South Carolina-Mississippi district to a decrease of 9 percent in the Oregon-Washington district. Shipments from mills in California were 14 percent higher than in December, 1951.

STOCKS—Mill stocks of 15,964,000 barrels of finished portland cement were reported on hand December 31, 1952—11 percent less than on the same date a year ago, while stocks of clinker amounted to 5,280,000 barrels—12 percent more than on the same date last year.

## Columbia Cement Div. Plant Specializes in Safety Records

According to Walter K. Farst, general manager of the Pittsburgh Plate Glass Company's Columbia Cement Division plant at East Fultonham, Ohio, this operation has completed its third consecutive calendar year without a lost-time accident.

The plant previously had won the safety trophy awarded by the Portland Cement Association in 1931, 1935, 1947, 1948, 1950, 1951, and 1952. This is the first time in the history of the plant that three consecutive years, involving 2,360,255 man-hours of work, were completed without a lost-time accident.

On July 13, 1952, the operation completed 1,000 days without a lost-time accident, a record which entitled the plant to become a member of the 1,000 Day Club sponsored by P.C.A. The plant's latest safety achievement is the more significant because heavy repairs were in progress much of the time during the last three years.

● R. J. Hearing, Columbia Cement Div. safety director, inspects the bulletin board used to keep safety constantly in the minds of all plant employees.

Management's first step in planning for accident-free operation was to organize an employees' safety committee. This group is composed of one delegate from each department, a worker who is coached to think, act, and teach safety to his co-workers. Since each member serves on the committee only three months, it is expected that eventually every employee will have spent some time on the committee. Mr. Farst stated that that another important factor in the safey campaign has been the participation and co-operation of Local 24 United Cement, Lime & Gypsum Workers International, A.F.L.

Bulletin boards are kept neat, so that each new safety display receives full attention. To record the number of days worked without a lost-time accident, the company has provided an illuminated safety bulletin board near the entrance.

## Paul H. Townsend Named President and Treasurer Of Huron Portland Cement

At the annual meeting of the board of directors of the Huron Portland Cement Company on January 27, 1953, Paul H. Townsend was elected president and treasurer. Emory M. Ford was elected chairman of the board.

Mr. Townsend joined the Huron or-

Paul H. Townsend

ganization in September, 1919, as superintendent of the distributing plants and vessels. He became general manager of the company on May 25, 1939, was elected vice-president and general manager on December 8, 1952, and became a director on January 27, 1944.

Mr. Townsend was born at Townsend's Inlet (now Clermont), Cape May County, N. J., where he lived during his childhood and youth. He left school at the age of 15 and did carpenter work in his father's boat shop. At the age of 17, he took a teacher's examination and taught in the same one-room school that he had attended earlier. Later he won a scholarship to Hotchkiss School, Lakeville, Conn., from which he was graduated in 1913. After another year of teaching, he entered Yale University, graduating with the class of 1918.

He enlisted in the U. S. Army in the first World War and served in France. He was wounded in action and received the Order of the Purple Heart. He was discharged from the Army in June, 1918, and joined the Huron organization three months later.

## Lone Star to Expand Virginia Cement Plant

The Lone Star Cement Corporation's plant at Lone Star, Va., is to be expanded 50 percent in capacity. This expansion is similar to a program recently announced for the company's Maryneal, Texas plant.

Both of these plants were placed in operation within the last two years. The plant at Lone Star was the subject of a complete article in the July, 1951 issue of PIT AND QUARRY.

## Armour Research Foundation Offers Research Fellowships

A number of industrial research fellowships in physics, chemistry and chemical engineering, metallurgy, ceramics and minerals, engineering mechanics, and electrical engineering are being offered by Armour Research Foundation of Illinois Institute of Technology, Chicago, Ill.

Research fellows will attend Illinois Institute of Technology half-time and work in the Research Foundation half-time in a graduate program leading to advanced academic degrees. They are employed full-time by the Foundation during the summer.

The Foundation awarded nine fellowships in 1952, and plans to award about 15 in 1953. Fellowships begin with the school semester in September, 1953, and continue through the summer for approximately 21 months until the end of the second academic year in June, 1955.

Awards are made on a competitive basis to U.S. citizens under 28 years of age holding a bachelor's degree from an accredited engineering or scientific school or a liberal arts college with a major in the sciences.

In addition to tuition, fellows are paid $165 a month during the first academic year, $325 a month with a two-week paid vacation during the summer, and $190 a month during the second academic year. Successful candidates are encouraged to accept full-time employment during the summer preceding the fellowship at a rate of $300 a month.

Application forms may be obtained from the Office of Admissions, Graduate School of Illinois Institute of Technology, Chicago, Ill. Applications received prior to March 15, 1953, will be given first consideration.

## *Cover Picture....*

● This month our cover cut shows a scene on the exhibit floor of the Cleveland Public Auditorium during the National Concrete Masonry Association convention. Approximately 70 manufacturers showed their equipment in this year's show, which was held in connection with the 33rd N.C.M.A. annual convention from January 25 to 29. For a full report of the meeting, see page 210.

## Administrative Assistant And Engineer Named by National Slag Association

Arthur B. Mobley has recently joined the staff of the National Slag Association in the capacity of engineer and administrative assistant. He will divide his time

Arthur B. Mobley

between work in the field on engineering problems and assisting the managing director, E. W. Bauman, in the headquarters office in Washington, D. C.

Mr. Mobley served in the Navy for two years, after which he entered the University of Maryland, graduating in 1950 with a Civil Engineering Bachelor of Science Degree. Following graduation Mr. Mobley was employed by the Maryland State Roads Commission for two and one-half years, and most recently served as materials engineer for the Baltimore County Highway Department.

## Texas Industries Announces Change in Stock Structure

Stockholders of Texas Industries, Inc., recently approved a split of the company's outstanding common stock on a basis of two for one, as recommended by the directors on January 15. Stockholders of record February 9, 1953, will receive a certificate for one additional share of common stock for each share held on that date.

Ralph B. Rogers, president, stated that the capital of the company is neither increased nor decreased by the action. The only change is that $1 for each share of common stock outstanding will be transferred from the capital surplus account to the capital account of the company. The result is twice as many shares of common stock outstanding.

Holders of the company's 6 percent convertible debentures are automatically entitled to convert their debentures into shares of the common stock of the company at one-half the price set forth in the indenture.

Mr. Rogers told stockholders that Texas Industries, Inc., is now the nation's largest producer of expanded shale or clay lightweight aggregate, and one of the leading manufacturers of lightweight building blocks and other concrete masonry units. The company operates 14 plants in Texas and Louisiana.

## Dead-Burned Magnesite Made at Gabbs, Nev., Plant Of Standard Magnesia Co.

Facilities to permit the continuous production of dead-burned magnesite were placed in operation early in 1952 at the Gabbs, Nev., plant of The Standard Magnesia Company. The plant is located adjacent to the company's mines in the extensive magnesite and brucite ore reserves just east of Gabbs.

Burning is being done in a 10- by 8- by 195-ft. rotary kiln. The kiln, except for a 10-ft. by 80-ft. section which had previously seen service in a Utah operation, was built by the Standard Steel Corporation of Los Angeles. It revolves on four riding rings and is lined with refractories appropriate to withstand temperatures in excess of 3,000 deg. F. in the hot zone, where clinkering of the raw magnesite occurs.

A Vanderwerp recuperator, integral with the kiln at the discharge end, preheats the air of combustion and performs the primary cooling function before the clinker drops to a Standard-Hersey rotary cooler for the final cooling of the dead-burned material. The cooler was also manufactured by Standard Steel Corp. in its Los Angeles plant. Both cooler and kiln were shipped by rail from Los Angeles in the largest sections possible, governed by railroad clearances.

Principal use of the dead-burned magnesite product is for furnace bottoms and furnace repairs in the open-hearth steel industry.

Standard Magnesia is an affiliate of the Standard Slag Company of Youngstown, Ohio, L. A. Beeghly, president. R. O. Jones is general manager at Gabbs. F. W. Reinmiller is mine superintendent, and S. V. Wines is chief chemist.

In addition to its magnesite operations, Standard Slag during the last two years has become the largest iron-ore producer in the state of Nevada, with operations at the Stokes Mine, near Gabbs, and the Minnesota Mine, near Wabuska. All the output is shipped to Japan, going by rail from Luning, Nev., to Richmond, Calif., where the ore is reloaded onto sea-going vessels destined for various Japanese ports.

## Cedar Hollow Magnesia Plant Closed by Warner Company

The Cedar Hollow magnesia plant of the Warner Company has been closed down. The company acted after it had found that there was no possibility of operating the plant profitably.

The plant was built after the company had experimented and found a method of producing magnesium oxide from dolomite.

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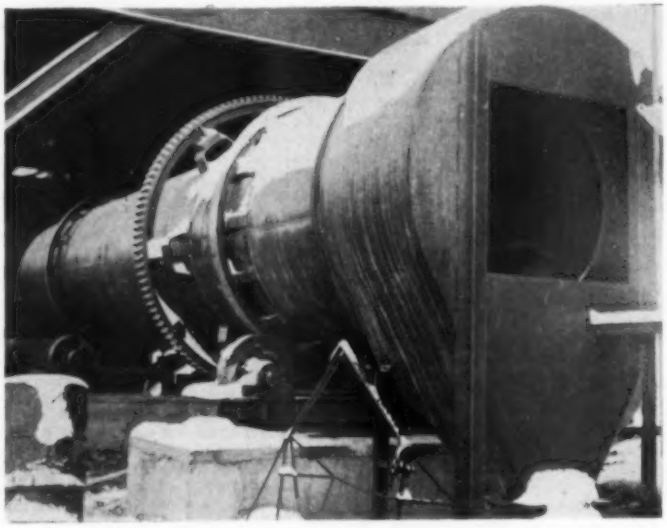
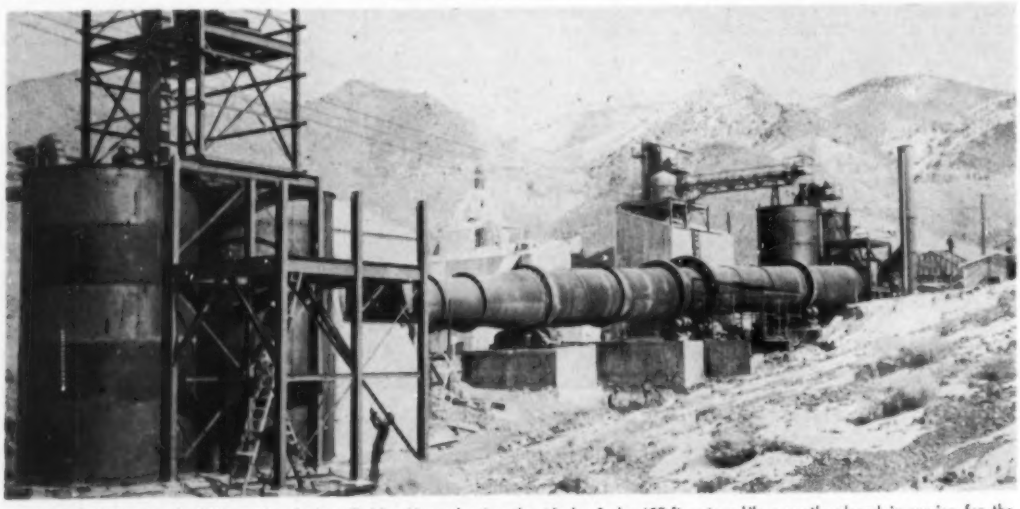
The Northwest Gypsum Company, Weiser, Idaho, is planning to install a tramway over the Snake River to gain access to their Rock Creek deposit in Washington County, Idaho.

The tramway is expected to reduce the haulage distance from 31 miles to Weiser to 9 miles to Huntington, Ore.



● Final cooling of clinkered magnesite after it comes from the kiln is accomplished in this rotary cooler. Primary cooling and preheating of the air of combustion is done by a recuperator integral with the kiln at the discharge end.



● A view of the Standard Magnesia plant at Gabbs, Nev., showing the 10- by 8- by 195-ft. rotary kiln recently placed in service for the dead-burning of magnesite.

## S. W. Stauffer of N.L.A. Elected Member of House On Republican Ticket

S. Walter Stauffer, who served as president of the National Lime Association from 1936 to 1946, was recently elected a member of the House of Representatives from the 19th Congressional District of Pennsylvania. He is a Republican and a resident of York, Pa. Since President Eisenhower's farm is located in this district, and he is expected to establish a legal residence there, Mr. Stauffer may become known as the President's congressman.

Although he had not been active in partisan politics, Mr. Stauffer had served for three years as chairman of the York City Housing Authority and also played an important part in civic affairs.

Mr. Stauffer's business career has been a varied one—including a mail-order concern in which he and his brother are partners. The firm still sells cured, aged hams. Congressman Stauffer began turning out hams when he was 30 years old, at first as a hobby. At present he is a director of the First National Bank of York and of the Columbia Water Company, Columbia, Pa., and vice-president and chairman of the executive committee of the York County Gas Company.

On the Stauffer wooded property in the vicinity of York a Revolutionary War enterprise known as the Codorus Furnace still stands. It was used during the days of our first war for making cannon balls for General Washington's Army. Mr. Stauffer recently turned the historic factory over to the Conservation Society of York for preservation.

## November Lime Sales Dip But Pass Nov., 1951, Mark

In November, 1952, domestic sales of 662,435 tons of open-market lime were 12 percent lower than in the previous month, according to reports of producers to the U. S. Bureau of Mines. Decreases were noted in sales for all major uses of lime. The following table shows sales by types and major uses.

S. Walter Stauffer

## Granite Supplants Quartz In Scottish Operation

An unusual feature of the new Scottish Agricultural Industries, Ltd., sulphuric acid plant completed recently at Aberdeen is the use of Corrennie granite as an alternative to the quartz which is normally used in the towers. This is the first time that granite has been used for this purpose in the United Kingdom.

The new Aberdeen plant is said to be one of the most modern erected in the world and incorporates data seen in many European countries by S.A.I. technicians before plans were prepared. It incorporates a large flash roasting pyrites furnace and a Petersen tower plant, three of the towers being packed with Corrennie granite.

Capacity of the plant is 80 tons of iron pyrites per day to give a 50 percent sulphur yield, which will be used in the production of superphosphates for agricultural use in the northeast and north of Scotland.

Lime Sold by Producers[1] in the United States, January-September, 1952, October-November, 1952, November 1951, by Types and Major Uses (Short Tons)

| | January-September, 1952 | October 1952 | November 1952 | November 1951 |
|---|---|---|---|---|
| By types: | | | | |
| Quicklime | 4,264,157 | 582,078 | 530,178 | 504,847 |
| Hydrated lime | 1,403,946 | 168,379 | 132,257 | 133,453 |
| Total lime[2] | 5,668,103 | 750,457 | 662,435 | 638,300 |
| By uses: | | | | |
| Agricultural: | | | | |
| Quicklime | 46,961 | 7,424 | 3,037 | 3,767 |
| Hydrated lime | 162,340 | 13,117 | 6,985 | 7,968 |
| Total | 209,301 | 20,541 | 10,022 | 11,735 |
| Building: | | | | |
| Quicklime | 159,836 | 19,868 | 15,235 | 17,337 |
| Hydrated lime | 707,264 | 89,473 | 69,307 | 69,468 |
| Total | 867,100 | 109,341 | 84,542 | 86,805 |
| Chemical and other industrial: | | | | |
| Quicklime | 2,733,948 | 350,182 | 320,103 | 317,287 |
| Hydrated lime | 534,342 | 65,789 | 55,965 | 56,017 |
| Total | 3,268,290 | 415,971 | 376,068 | 373,304 |
| Refractory (dead-burned dolomite) | 1,323,412 | 204,604 | 191,803 | 166,456 |

[1]Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics.

[2]Approximately 60 percent of lime produced is high-calcium and 40 percent high-magnesium.

## New Book on Lime and Limestone Published by Dr. Knibbs and B. J. Gee

A technical book on lime and limestone has just been published. The new work, *Lime and Limestone, Part I*, was written by Dr. N. V. S. Knibbs and B. J. Gee. It is published by H. L. Hall Corporation, Ltd., Toronto, Canada.

This volume includes the following: The Origin, Occurrence, Properties, Chemistry, Analysis and Testing of Limestone, Dolomite and Their Products; Theory of Lime Burning and Hydration. In addition to technical data on the subjects, the volume contains an extensive bibliography.

## Wood Named District Engineer Of P.C.A. Columbus Office

H. G. Wood has been appointed district engineer of the Columbus (Ohio) office of the Portland Cement Association, effective immediately, according to an announcement released by Carl D. Franks, P.C.A. executive vice-president. Mr. Wood succeeds N. O. Wagner, who has resigned. Mr. Wood joined the staff of the Portland Cement Association in 1937 as a field engineer for the Columbus office. Ten years later he was promoted to the position of statewide paving engineer, which he held until the time of his new appointment.

A graduate of Case Institute of Technology, Mr. Wood received a B. S. degree in civil engineering. He was employed for six years by the United Fruit Co. and later by the Government of Costa Rica on railroad and highway design and construction in that country. From 1929 to 1934 he worked on design and construction of state and county highways in various parts of Ohio and then spent three years as a WPA district engineer before joining P.C.A.

Mr. Wood is an associate member of the American Society of Civil Engineers and is a registered professional engineer in Ohio. As district engineer of the Columbus office, he will direct association activities in Ohio and West Virginia.

## Arundel Corp. Receives Award For Excellent Management

The Arundel Corporation, Baltimore, Md., has been awarded a Certificate of Management Excellence for the year 1952 by the American Institute of Management, New York. According to Jackson Martindell, president of that nonprofit foundation, only 330 companies in the United States and Canada, out of the 3,000 leading concerns whose methods were studied by the Institute, were found eligible to receive the designation. This is the third consecutive year in which Arundel has obtained the award.

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A bid of $24,001 was awarded the Aurora Limestone Company of Aurora, Iowa, for the resurfacing of approximately 20 miles of county roads. The project involves 6,875 tons of Class A crushed stone.

# Empire State S.G.—R.M.C. Assn. Holds Annual Meeting at Albany

ALTHOUGH it is one of the younger organizations in the industry, the Empire State Sand, Gravel and Ready Mix Association is one of the busiest in aggressively pushing the best interest of producers throughout New York State, the group's mid-winter meeting indicates.

Meeting at Albany on January 15th in an all-day session, the sand, gravel and ready-mix men discussed the many problems that exist in the Empire State, heard encouraging reports of progress on several fronts from their officers and executive board, and listened to four speakers on subjects of vital interest to their business endeavors. Nearly 70 persons attended.

The infant organization is headed by Harry A. Barney, Barney & Dickenson, Vestal. Leon H. Wendel, Gasport Sand & Gravel Company, Lockport, is vice-president. William H. Nass, Syracuse Ready Mix Concrete Company, Syracuse, is secretary. John Hopkins, Albany Gravel Company, Albany, is treasurer. Paul R. Smith of Buffalo serves as executive secretary.

The state highway department knows it cannot get along without dependable ready mix producers, Mr. Wendel told the group, reporting on the meeting his Ready Mix Concrete Committee had with the Chief Engineer of the State Highway unit. Through the educational efforts of the Association, the number of objectionable cylinders delivered to the department during the past year has been reduced from a very high percentage to a tiny fraction, he reported. The Chief Engineers' office has promised to standardize the requirements for ready-mix concrete at all district offices throughout the state, he said.

Representations by the Empire State Association to the Commissioner of Motor Vehicles have been successful in establishing a more favorable schedule of minimum registration fees for ready mix trucks, the meeting was advised. All County Clerks have been advised that the trucks can be registered under a special section of the bureau's regulations instead of being paid at the maximum gross weight as heretofore. Many producers will save on their license fees as a result.

Some form of weight-distance highway use tax seems inevitable, since this scheme is spreading across the nation, Mr. Smith told the organization. Attempts to eliminate the zoning provisions in the New York State Highway Use Tax are stymied, pending the outcome of a court case that might possibly invalidate the levy. The Association favors the elimination of all zone taxation, or, failing that, the amendment of the present regulation to designate the zone area as a specific market area radius around the producing plant.

The value of concerted group effort has been amply illustrated by the fine reception the organization has gotten from all the state officials it has approached, Mr. Barney told the meeting, lauding his colleagues for their untiring efforts and unselfish contribution of time and energy in behalf of the entire industry. The membership now numbers about 100 firms. The annual meeting will be held in May, with election of officers as the principal item of business.

"One of the most complicated sections in the Federal Income Tax Law", Percentage Depletion, was discussed in a tandem presentation during the meeting by H. H. Kirwin, treasurer of Eastern Rock Products Company, Utica, and Paul J. Kremer, controller of the Buffalo Slag Company, Buffalo.

The speakers outlined the points that must be considered by sand and gravel producers in taking percentage depletion allowances on their properties. Practical applications covering various types of property holdings were detailed in balance-sheet form so that all could see the factors that must be taken into consideration under varying circumstances, and judge for themselves the advantages or disadvantages in taking this type of deduction in specific instances.

The luncheon was addressed by two guests, Dr. Donald H. Davenport, Deputy Commissioner of the State Department of Commerce, and L. Judson Morhouse, executive director of the New York Good Roads Association.

New York has been blessed through the years with the finest transportation systems, Dr. Davenport told the group, and as a result has held an economic preeminence over the other states. However, several factors—population shifts, federal government favoritism for industry in other areas, the transfer of certain industries to the South—have created problems which the state and its businessmen must face lest there be a drop in the economic condition of the population.

New York officials are constantly working to equalize the competitive advantages offered by other states and to keep New York growing, but this is a task that every resident, and more importantly every businessman with a stake in the state's welfare, must consider his duty.

Governor Dewey has finally appointed the members of the State Highway Finance Planning Commission, Mr. Morhouse reported to the operators, discussing the outlook for highway programs in the coming years. This commission is planning to undertake a survey of city road conditions, and hopes to set up a ten year program of highway expansion and improvements. The answer as to how to finance highway development must come first before further planning can proceed, Mr. Morhouse stressed.

## Marquette Cement Shows Higher Sales, Profit in '52

Marquette Cement Manufacturing Company officials report an 18 percent increase in net income and a 19 percent gain in shipments for the year 1952, as compared with 1951.

Marquette sales for the 12 months ended December 31, 1952, amounted to $28,344,368, against $23,865,414 for 1951. Net income was $3,527,441, equal to $3.92 per common share, as compared with $2,995,540 or $3.30 per share for 1951.

It was indicated that the greatly increased shipments were made possible by near maximum production maintained throughout the year on newly added plant capacity. This also served to offset rising costs during the year, the company reports.

Fourth quarterly sales and shipments in 1952 exceeded those of the same 1951 period; but year-end adjustments running counter to those of the previous year reduced earnings for the last 1952 quarter below those of the same period in 1951. Marquette reported unfilled orders at the year-end at 14 percent ahead of December 31, 1951.

## Dravo Corporation Issues Sound Film on Construction

Dravo Corporation, Pittsburgh, has completed a new 30-minute, 16-millimeter sound film in color documenting many of the firm's industrial activities.

Entitled *Portrait of an Enterprise*, the movie features on-the-job scenes of heavy construction projects, river locks, dams, and bridges. Also included are riverboat and barge construction and launchings, and operation of large ore unloaders. Production and distribution of river sand and gravel are highlighted in other sequences.

This film is available without charge for showing to engineering groups, schools and colleges and other interested organizations. Write to Advertising Department, Dravo Corporation, Neville Island, Pittsburgh 25, Pa.

## 4,000 Tons of Lime Used In Road Stabilization Project

According to *Limeographs*, newsletter of the National Lime Association, the use of lime stabilization is enjoying steadily increasing popularity. To prove the statement a road base stabilization job at Camp Polk, Leesville, La., is described. It seems a total of approximately 4,000 tons of hydrated lime was used.

In stabilizing the 6-in. road base 3 percent (by weight) of hydrated lime was used. Actually, the lime was used in reconstructing the "worn out" bituminous roads throughout the camp. Before the lime was mixed into the base course material, the asphaltic wearing surface was bladed off. In the reconstruction a double application of asphalt, with gravel applied between the first and second layers, was used as the new wearing course.

The lime was used for the dual purpose of (1) reducing the plasticity of the soil component in the base course material and (2) for its cementing action, which develops strength in the base.

## A. B. Zahn Completes Half Century in Manufacture Of Cement Machinery

Captain A. B. Zahn, known throughout the country to the cement industry as "Archie," is receiving congratulations from friends on his completion of fifty years of service with F. L. Smidth & Co., New York.

Archie joined up with the company on January 31st, 1903, the company having been incorporated just eight years previous, in 1895. Starting at the very bottom of the ladder, he served in many basic jobs. On September 4th, 1917 he was elected a director of the company and on April 25th, 1927 was made assistant treasurer and was appointed secretary of the company on July 18th, 1938.

During his fifty years of experience, he has seen the cement industry grow from its swaddling clothes to reach the stature of one of the major industries of the world, of vital importance, not only to the civilian world but to the military during World Wars I and II.

A luncheon and later a banquet were tendered to him by company officials and fellow workers at which he was presented with many gifts to commemorate the event.

An ardent fisherman and game hunter, Archie knows the ways of the wild. For years he has spent his vacations enjoying life in hunting and fishing camps and to this day enjoys his favorite pastimes.

A walking encyclopaedia of the cement industry he has stored in his memory a great many of the important advancements in the manufacture and use of cement making equipment. He invented the special figure 8 chain used in rotary kilns for heat recuperation.

F. L. Smidth & Co., one of the world's largest designers of cement making factories and manufacturers of machinery used in cement plants and other industries, have to their credit over 1,000 rotary kilns and more than 5,000 grinding mills throughout the world.

At his desk every day, there seems to be little change in his appearance or slowing down in his energy. Time has been good to him.

Archie has been for many years a member of the Sons of the Revolution and the Sons of the American Revolution, devoting considerable interest in the affairs of these organizations.

He is also a director and secretary of F. L. Smidth & Co. of Canada, Ltd.

## C. F. Colley of Universal Atlas Retires—Replaced by Henning

Charles F. Colley, assistant plant manager at the Hannibal, Mo., plant of Universal Atlas Cement Company, retired at the end of January after 37 years of service. Appointed as his successor, effective February 1, is Mike M. Henning who has been process engineer at the cement company's plant since October, 1951. Succeeding Mr. Henning as process engineer is Edmund L. Mengel, who has been assistant quarry general foreman since January, 1952.

Mr. Colley attended Tri-State College of Engineering, Angola, Ind., where he

Archie B. Zahn

was graduated as a civil engineer. Before coming to the Hannibal plant in 1916, he was employed successively by the D. & H. Railroad; U. S. Engineers, the Port of New York; and the Mexico Light & Power Company, Mexico City, D. F. He served in the U. S. Army from 1917 to 1919 and was honorably discharged as a 1st lieutenant of artillery. After World War I Mr. Colley returned to the Hannibal plant and (in 1928) was promoted to plant engineer. In 1931 he was given additional duties as head of the industrial relations department, and in 1947 he was appointed assistant plant manager.

Mr. Henning, newly-appointed assistant plant manager, is a graduate of the Missouri School of Mines and was employed by the American Rolling Mill Company, Huntington, W. Va., until his induction into the U. S. Army in September, 1944. A year after his return to the Hannibal plant in 1945 he became practice engineer. He was made process engineer in 1951.

Mr. Mengel, who succeeded Mr. Henning as process engineer, was employed as an engineering trainee at the Hannibal plant in 1949, following his graduation from the Missouri School of Mines. He was assigned to the quarry department as assistant to the general foreman in 1951 and was promoted to assistant quarry general foreman in 1952. He served in the U. S. Army from March, 1943 to October, 1946, and was commissioned a 1st lieutenant in the Army Corps of Engineers.

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The steamer *Carl D. Bradley*, one of Michigan Limestone Division's Bradley Transportation Line's seven self-unloading vessels, carried 1,556,000 tons of limestone in 1952, the largest tonnage in the line's history. In 1953, however, the mark should fall to the line's new steamer *John C. Munson*, which is expected to carry nearly 2,000,000 tons of limestone during that year. In the last 104 days of service in 1952, the *Munson* carried 771,000 tons.

## 2 Plants in Newfoundland Launched by Government For Private Operation

According to the *Newfoundland Journal of Commerce*, two new nonmetallic minerals plants went into production in the province last year. At Humbermouth the North Star Cement Company, Ltd., has been making cement which is being marketed both on the mainland and in Newfoundland. Developed by the provincial government, the plant was sold last year to the principals operating the Canadian Machinery and Industry Construction, Ltd., plant at Octagon Lake. The transaction was in line with the government's policy of building plants and later turning them over to private industry for operation.

Also at Humbermouth, the Atlantic Gypsum Company, Ltd., has been turning out gypsum plaster, plasterboard, and plaster lath for several months. This government-built plant is being operated by a Crown corporation, but the provincial government contemplates its sale to private industry.

## New York Legislators Work For State Safety Measure

A bill setting up statewide safety regulations for sand-and-gravel pits has been introduced in the New York State Legislature by State Senator Warren M. Anderson and Assemblyman George L. Ingalls, both of Binghamton, N. Y.

The bill would permit towns in the state to establish safety regulations for sand-and-gravel pits, stone quarries, and other excavations. The two Broome County legislators said they thought the need for such a law is great enough to make it statewide. If it is not passed, however, they feel they can get a similar measure approved for Broome County, where there has been considerable sentiment in its favor.

Recently State Senator S. Wentworth Horton and Assemblyman Edmund R. Lupton of Suffolk County introduced a similar bill, but it was amended to remove sand-and-gravel pits from safety control. Numerous objections were received from farmers who feared that farm ponds and ditches would be covered by the law. The Suffolk County bill would require persons owning open wells, cesspools, cisterns, catch bazin, and sumps to enclose the opening with fences and lock the gates when the openings are unguarded.

## Internatl. Minerals & Chemical Shows Gain in Sales Total

Net sales of International Minerals & Chemical Corporation for the six-month period ended December 31, 1952, totaled $35,729,199, as compared with $31,846,546 for the six-month period ended December 31, 1951.

Net earnings before income taxes for the six-month period ended December 31, 1952, were $2,700,856, as compared with $2,708,492 for the six-month period ended December 31, 1951. Net earnings after taxes for the six-month period ended December 31, 1952, were $1,720,856.

# 30 years ago in Pit and Quarry

**By WALTER E. TRAUFFER**

A study of the March 1923 issue of PIT AND QUARRY makes it evident that the editorial policy then as now was to provide its readers with a wide variety of information of value to them in operating their businesses. This included not only news, operating, engineering and technical data but also articles on the legal, tax, business, safety and other phases of their operations.

The operating articles included one by Oliver Bowles on "Use of Churn Drill at Lime Quarries," a type of operation which was then much addicted to the use of jackhammers and wagon drills and hand loading because of the necessity for selective quarrying. His article was prophetic as the trend in the lime industry since that time has been toward larger operations using the same mechanical methods of loading common to the crushed stone industry.

Springtime danger of explosives was the subject of a staff-written article which pointed out that the greatest risk is in the spring when explosives are handled which may have been subjected to freezing and thawing. Either excessive heating or freezing, it was pointed out, can make a nitroglycerin dynamite dangerous. Advice was given on how to recognize explosives in either of these conditions and how some of it could be safely salvaged.

"Special Uses of Crushed Stone" was the title of a paper printed in full which was presented at the recent convention of the National Crushed Stone Assn. by John J. Sloan, Wisconsin Granite Co., Chicago. A legal article by E. J. Buckley told how a buyer can protect himself in case the goods purchased do not meet specifications. "Valuation of Stone Deposits" was discussed at length by Joel H. Watkins, mining geologist.

A feature of this issue was a complete description of the granite quarry and crushing plant of Weston and Brooker Co. at Cayce, near Columbia, S. C. This was probably the first of a number of articles on this operation published in PIT AND QUARRY as this operation was expanded and improved to its present position as one of the outstanding quarries in this country. At that time the quarry was only a small fraction of its present size but already a face 140 ft. high was being worked. Capacity then was about 1500 tons per day. The new cement plant of the Ship Canal Portland Cement Mfrs., Ltd., near Liverpool, England, was also described in detail.

At the fifth annual convention of the National Slag Assn., held at the Hollenden Hotel in Cleveland, February 16, 1923, the following officers were elected: President, C. L. McKenzie, Duquesne Slag Products Co., Pittsburgh; vice-president, C. E. Ireland, Birmingham Slag Co., Birmingham, Ala.; secretary-treasurer, H. J. Love. A. T. Goldbeck, then chief of the division of tests of the U.S. Bureau of Public Roads, discussed with producers tests being made of the properties of slag as an aggregate in concrete.

There was much activity in the various nonmetallic minerals industries in the form of plant expansion and new plant construction. The Universal Gypsum Co. was reported going ahead with a large plaster plant at Port Clinton, O. The Fort Worth Sand and Gravel Co. was organized at Fort Worth, Texas, with R. M. Quikley, H. P. Bonner and J. C. Hart as incorporators. The Turner Gravel Co., San Antonio, Texas, was incorporated by A. P. Turner, L. Hetlage and James Aiken.

In the cement industry there was also great activity. The International Cement Corp. bought the Bonner Portland Cement Company's plant at Bonner Springs, Kans. Active progress was reported on the construction of the new Lehigh Portland Cement Co. plant at Tarrant City, near Birmingham, Ala. Work was also under way on the new plant of the New Egyptian Portland Cement Co. at Port Huron, Mich. Many other plant expansion programs were also reported under way.

## January Construction Activity Passes $2,300,000,000 Mark

Construction activity continued at record high levels during January, 1953, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics and the Building Materials Division of the U. S. Department of Commerce. Despite a seasonal decline of 8 percent from December, the total value of new construction put in place during January amounted to more than $2,300,000,000, 6 percent above that of January, 1952. This marks the 14th consecutive month that the current total has exceeded that for the comparable month in the previous year.

The high level of activity during January, 1953, largely reflected substantial increases from January, 1952, in private residential building, plus gains in private commercial building and in major types of public construction.

Expenditures for privately financed construction put in place during January totaled $1,623,000,000, 9 percent less than in December and 7 percent more than in January a year ago. The December-January decline in private work resulted largely from the usual midwinter lull in private housebuilding. Private outlays on public-utility construction also were down seasonally in January, but industrial and commercial construction held at the December level.

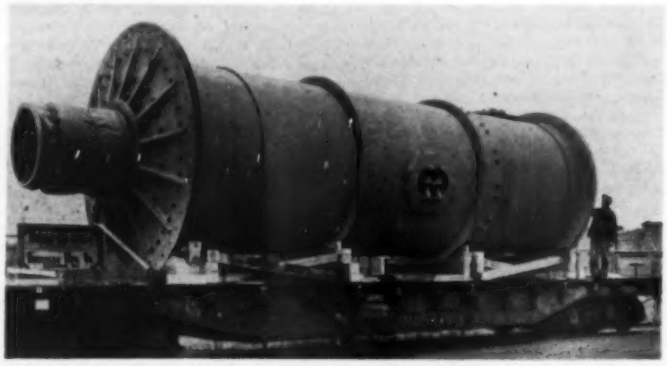
Seasonal declines from December in all types of public work brought total public construction expenditures for January to $685,000,000, 5 percent under December. Nevertheless, the dollar volume of public construction was 4 percent higher this January than in January, 1952.

## Pennsalt's Neoprene Paint Presented after Plant Tests

The Pennsylvania Salt Manufacturing Company, after three years of testing under the most severe corrosion conditions in its own plants, has introduced a new system of anti-corrosion coating using specially formulated neoprene coatings.

The new system, reported Pennsalt maintenance engineers, has resulted in savings up to 50 percent per square foot in the maintenance painting and coating costs in the company plants.

The special formulations, added to Pennsalt's regular line of corrosion resistant paints and cements, are NeoCoat and NeoPrime A (for surfaces except concrete) and NeoPrime B (for concrete).



**• Shown before shipment to the Missouri Portland Cement Company's modernized Sugar Creek, Mo., plant is this 179,000-lb. shell of a Nordberg 9-ft. 6-in. by 32-ft. ball mill. This mill, the second built at Nordberg's Milwaukee plant for the modernization of Missouri's plant, is of the two-compartment type and will be used for finish grinding. The first ball mill, shipped in August, 1952, was 16 ft. long with a 10 ft. 8 in. in diameter. It is now being installed for raw grinding.**

# New York Trap Rock To Move Entire Crushed Stone Plant

THE New York Trap Rock Corporation has recently signed a $600,000 contract with The Nicholson Company, New York, to dismantle a stone crushing plant at Cold Spring, N. Y., and to move and re-erect it at Haverstraw, New York, according to Wilson P. Foss III, president of Trap Rock. An additional $250,000 will be required for new machinery and steel, which will be purchased by the quarrying firm and installed by The Nicholson Company. The project is expected to be started in March of this year.

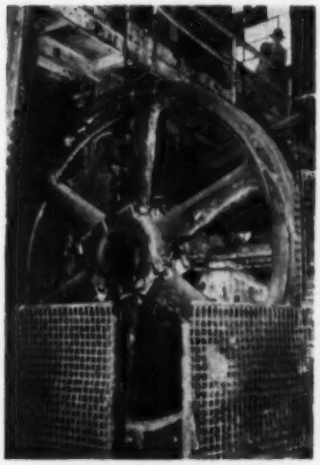
The major problem anticipated in the dismantling, moving, and erecting operation will be the handling of a 175-ton jaw crusher. This crusher is believed to be one of the largest ever built, and is capable of handling stones up to 5 tons in weight and breaking them into pieces smaller than 100 lb.

Realizing that the shortest distance between two points is a straight line, the New York Trap Rock officials first thought of moving the crusher by scow across the Hudson River from Cold Spring to Haverstraw. Since this would require costly and time-consuming shoring operations on both sides of the river, they decided instead to disassemble the crusher, mount the parts on a trailer, and truck them down Route 9E across the George Washington Bridge and up Route 9W to the quarry operations at Haverstraw. Although the Bear Mountain Bridge would have facilitated a shorter trip (see map), it could not possibly handle the crusher and trailer weight; one crusher part alone weighs 39 tons.

Two smaller crushers, 2,428 ft. of conveyor belt, over 2,000 cu. yd. of concrete, and some 300 tons of steel will be needed at the new site, in addition to the 175-ton crusher, and other facilities which will be moved.

(*Continued on page* 127.)

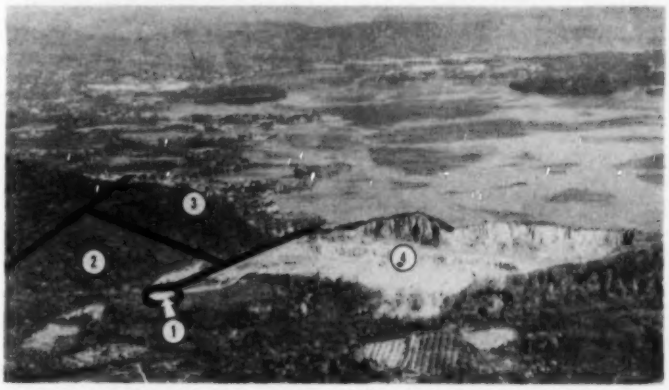
● Diagram of route which 175-ton crusher will take from its present berth in Cold Spring, N.Y., to its new location at Haverstraw.



● Large flywheel of 175-ton jaw crusher dwarfs Leo Fox on balcony.

● Tremendous size of crusher and its parts are revealed in picture showing Leo Fox, special assistant on heavy machinery for New York Trap Rock Corporation, with 4-ft., 150-lb. wrench.

● Ground clearing starts new quarrying operations at Haverstraw plant. Picture shows Wilson P. Foss, III, president, New York Trap Rock, at controls of the shovel, and Bernie Finn, shovel operator.




● Aerial view of Haverstraw quarry, New York Trap Rock Corporation. (1) place where new crushing and quarrying operations will be carried on, (2) area which was re-zoned to prohibit quarrying operations, (3) unrestricted area where the firm may be forced to quarry should ban be continued in restricted area, and (4) face of present quarry. Note that bluff overlooking the Hudson River has been quarried from the rear only, thus leaving the river-facing side untouched.

# Rod Mill on Warner Company Dredge Produces Necessary Additional Fines

By E. N. BERNHARDT JR.
Superintendent of Dredge "Franklin"
The Warner Company
Philadelphia, Pa.

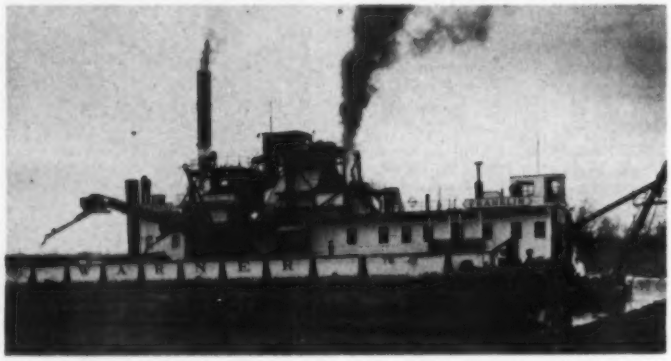


Figure 1. A general view of the starboard side of the dredge "Franklin." The two barges in the foreground are being loaded with gravel. The mill was installed in the space between the tailwheel of the conveyor and the small control house.

another P&Q exclusive

THE dredge "Franklin" of the Warner Company is a sand-and-gravel processing machine which is engaged in converting privately-owned land abutting on the Delaware River into commercial sand and gravel products. It produces two grades of sand; plastering sand, which is minus 8-mesh, and concrete sand that must be 95 percent minus No. 4 and 100 percent passing ⅜-in.

Two grades of gravel are also produced by this dredge—namely, 1-in., which passes 100 percent through 1¼-in. round, and a 2-in. gravel that passes 100 percent through 2⅛-in. round. This latter can be produced to be either the graded or stripped specification. By changing two screens and altering the path of travel of the gravel through the chutes, it is also possible for the dredge to produce pea gravel, which is 100 percent passing ⅜-in. Four barges are loaded simultaneously, two on each side, by means of outrigged belt conveyors, which are provided with rotating distribution chutes at the outboard ends.

Figure 1 shows a general view of the starboard side of the dredge. The photograph was taken before the installation of the mill, which was made in the space between the letters "E" and "R" on the barge.

Because of the nature of the raw material, trouble was experienced with an excess of material between No. 4 and ⅜-in. After including as much of this material as possible in the gravels, the concrete sand would still have 15 percent between No. 4 and ⅜-in., whereas the specifications permitted only 5 percent.

This presented a serious problem. The unwanted material could not be run overboard since the dredge is operating in tidewater. In certain areas the underlying clay strata rises, and the resultant shoaling by the waste material caused grounding of equipment at low tide. Accordingly, this small material had to be processed to join the sand.

After two failures with other types of reducing equipment it was decided to install a small 4- by 9-ft. rod mill, furnished by Morse Bros. Machinery Company, of Denver, Colo. This was the largest machine that could be installed in the available space. Figure 2 shows the installation of the rod mill.

It was difficult to estimate the tonnage to be reduced, but it was initially figured at about 20 to 25 t.p.h. Actually, the maximum production of concrete sand was 240 t.p.h. Of this, 10 percent or 24 t.p.h. had to be reduced. Owing to normal screen inefficiency, the feed was only 82 percent plus No. 4, so that the theoretical tonnage then became 29 t.p.h. Snap samples with a stop watch indicated a flow of 35 t.p.h.

This was a tremendous feed for a mill of this small size. Conventional means of feeding, as by a scoop feeder or Archimedes screw, were grossly insufficient. Accordingly, it was decided to force-feed the mill by a jet of water. The detail of this is shown in Figure 3.

It was fully recognized that excess water would wash the charge through the mill too rapidly for good grinding, also causing greater wear of the grinding elements; but the situation of needing only a minor reduction of the charge met our requirements. It was not necessary to grind down to a normal sand specification as though stone sand were being produced. It was necessary only to reduce a preponderant quantity to less than No. 4 mesh. The product was reblended in closed circuit. Since the quantity comprised only 10 percent of the concrete sand, the

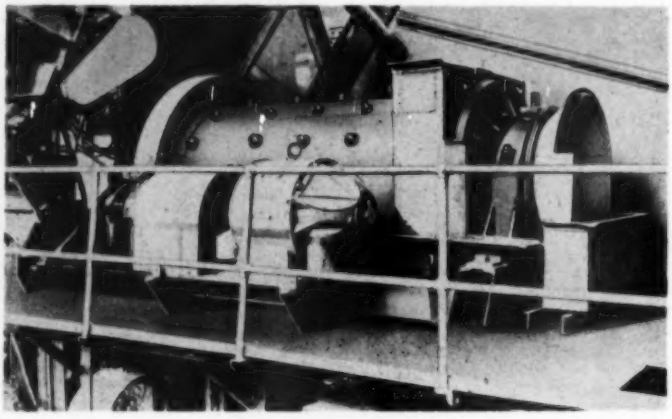


Figure 2. Installation of the 4- by 9-ft. rod mill. Feed is at the left; discharge is peripheral.

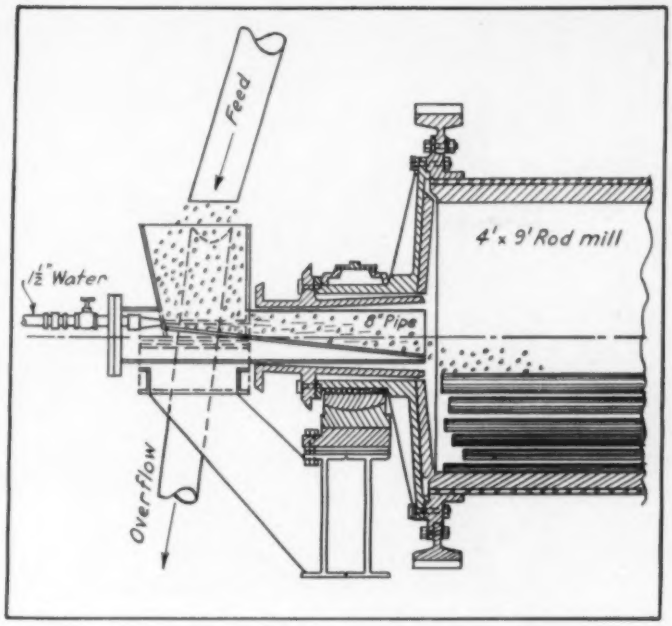



**Figure 3. Detail of rod mill feed. The method of water jet feeding gives a large volumetric feed for the small mill.**

grading of the mill product had little effect on the grading of the final blend of concrete sand. Indeed, it effected an improvement since we desired to increase the percent retained on No. 20 (to meet a special specification), and the mill product was very helpful in this respect. In order to facilitate the requirement of minimum grinding, peripheral discharge was used.

Furthermore, it was desired to produce as little minus No. 100 as possible, since the normal sand already contained the requisite amount of minus No. 100. Accordingly, the high tonnage and great excess of water in the pulp served to give the desired results. It is to be noted that the mill had to take the quantity that came to it, irrespective of what the momentary tonnage might be. On a floating hull there is neither space nor buoyancy for a surge feed bin.

The mill is powered by a 50 to 60-hp. variable speed direct current motor rated at 180-215 amperes, at 240 volts. The average current drawn by this motor is 160 amps. with the mill revolving at an average speed of 23.4 r.p.m. Power is transmitted from the motor through a Twin Disc fluid coupling and a Link-Belt herringbone gear reducer (with a speed ratio of 6.47:1) to a 19-tooth pinion, which drives a 109-tooth gear that is integral with the mill.

Manganese steel shell liners, whose surface is in the form of a flattened sine curve, varying in thickness from 2¼ in. to 3 in., line the cylindrical wall of the mill. Flat manganese steel liners are used on the intake and discharge ends. It is now believed that the corrugated surface of the shell liners is too flat, permitting too much sliding of rods and wear on the liners. This sliding was evidenced by the fact that the worn rods had an elliptical cross-section instead of circular, which would have been obtained had there been pure rolling. Lorain liners are now on hand for installation.

The original charge consisted of 2- and 3-in. rods. Some 2-in. rods were left over, and these were gradually used. At the present time, the mill is charged with four or five of the 3-in. rods per week. This charge maintains the level of rods at approximately 14 in, which is a few inches below the bottom of the feed pipe. It is desirable to maintain this depth of rods since there will be a maximum amount of rods to give weight for good crushing without creating an impingement of the feed on the rods at the entrance to the mill, causing the material to back up into the feed hopper. Also, by adding rods weekly, there is better crushing since the voids between the larger rods are filled by the worn rods.

The material inspector attempts to maintain the discharge product 80 percent or more passing No. 4 with a minimum of wear on the rods and liners. If a test on this material indicates that it is below 80 percent, the inspector can (a) increase the r.p.m. of the mill, (b) decrease the water injection, or (c) add more rods when the mill is shut down. The converse of the above three variables tends toward a coarser product, but creates less wear.

The following figures on cost of rods and liners are on an assumed actual production of 15 tons per hour. This calculation is based on the assumption of a feed of 25 t.p.h. that must be reduced to No. 4. Some of the feed is already minus No. 4, and the product contains a variable quantity of plus No. 4. We figure roughly that the actual reduction from plus No. 4 to minus No. 4 is about 60 percent of the feed, or 15 t.p.h. The figures for rods are based on the total time of operation from the date of installation until July 25, 1952, comprising 4,404 hours. The liners are for the life of the original installation, amounting to 3,080 hours.

**Rod Make-up**

| | |
|---|---|
| 206—3 in. rods @ 212# | 44,000 lb. |
| 64—2 in. rods @ 54# | 6,000 lb. |
| Total rods | 50,000 lb. |
| Hours operated | 4,040 hr. |
| Estimated reduction | 15 t.p.h. |
| Total | 66,060 tons |
| Lb. rods per ton | 0.76 lb. per ton |
| Cost @ 11c per lb. | $0.086 per ton |

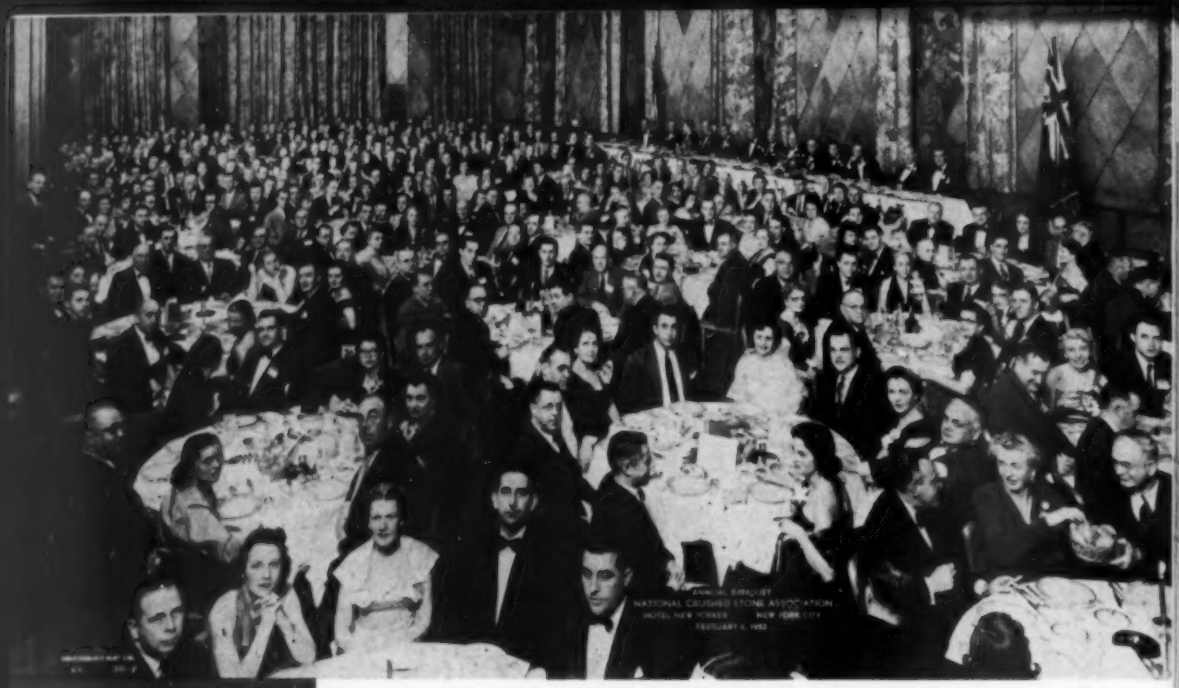
**Manganese Liner Cost**

| | |
|---|---|
| Life | 3,080 hours |
| Tons @ 15 t.p.h. | 46,200 tons |
| Weight | 11,520 lb. |
| Weight per ton | 0,188 lb. |
| Cost per ton | $0.045 |
| Rods as above | 0.086 |
| Total material cost | $0.131 |

Power being generated on the dredge by a diesel generator is estimated at $0.005 per electrical horsepower-hour. Average horsepower drawn by the rod mill motor is 56 hp. or 3.75 hp.-hr. per ton. Power cost is about $0.019 per ton.

There is no operating labor cost, since there is a barge loader operator nearby. He varies the speed of the mill by variable field control under the instructions of the material inspector, who tests the product periodically. This operator will frequently change the speed on his own initiative by the sound of the mill. He also starts and stops the mill with the operation of the dredge as a whole. Maintenance labor costs

(*Continued on page* 117.)



The annual banquet of the National Crushed Stone Association was held February 4 in the Grand Ball Room of the New Yorker Hotel, New York City.

# STONE PRODUCERS

## *Hold Top Notch Operating Sessions*

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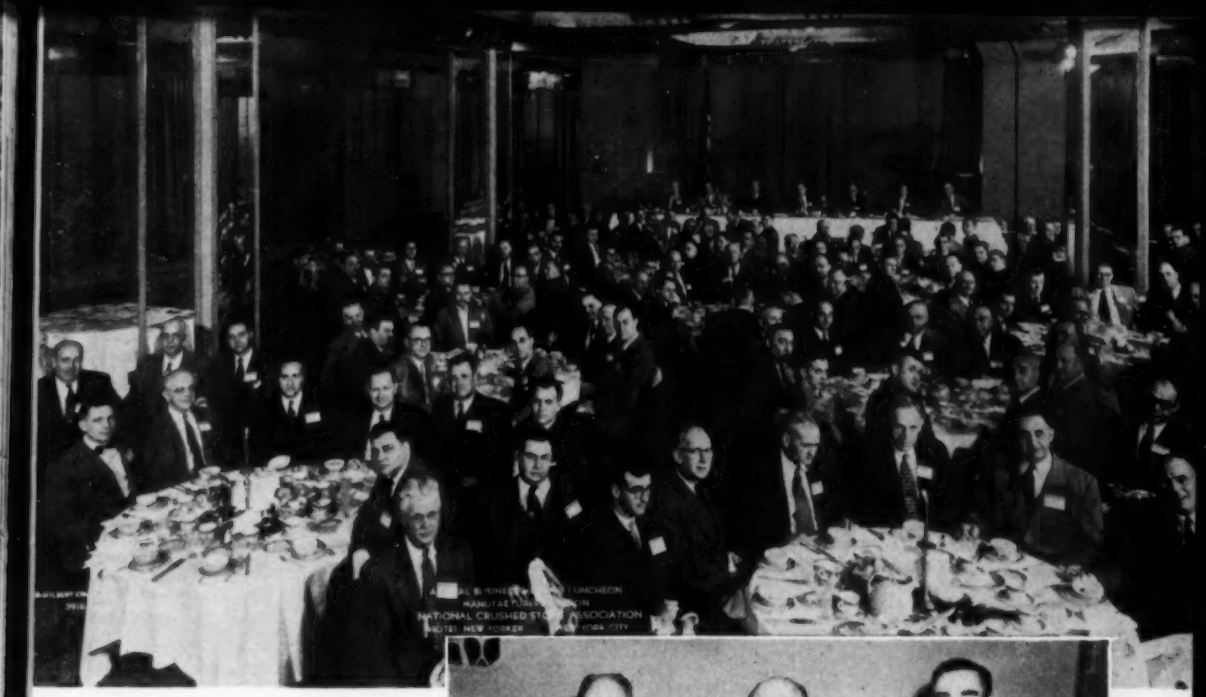
### Balanced Program Covers Wide Range of Business

Horace C. Krause, re-elected president, N.C.S.A.

matter ON THE SPOT report

THE 36th annual convention of the National Crushed Stone Association, which was held February 2, 3 and 4, 1953 at the New Yorker Hotel in New York City, reflected the spirit of optimism which prevails in this industry because of the recent change of Administration. The feeling that some of the artificial supports to business might be withdrawn was more than counterbalanced by the indications already apparent that some governmental restrictions on business would be removed. No complete official attendance figures are not yet available but it seems certain that producer attendance was near a record level for a non-exhibit year. The attendance of manufacturers' representatives was probably down somewhat due to the fact that another convention of importance to them was held at the same time in another city, an unfortunate circumstance which could not be avoided.

The convention program was up to the high standards of previous years in every way except, perhaps, in the caliber of the humorists featured at the general luncheon and the annual banquet. All attending were well repaid for their time, trouble and expense, whether they were interested in production problems, sales methods, technical developments, legislative developments or other subjects. An outstanding array



The annual business meeting and luncheon of the N.C.S.A. Manufacturers' Division was held at the New Yorker Hotel on February 3.

N.C.S.A. officials include J. R. Boyd, administrative director; A. T. Goldbeck, engineering director; and J. E. Gray, field engineer.

# at New York

★ ★ ★

## and Technical Problems

of speakers, almost all from within the industry or closely related to it, discussed such subjects as business conditions, engineering developments, sales methods, heated screens, safety programs, delay blasting, percentage depletion, use of stone in pavement bases, legislative outlook, employer-employee relations, drilling methods and other operating problems, in addition to the usual reports of Association officers, staff members and committees. Each address was followed by a question-and-answer period.

**Manufacturers Division** The combined luncheon and business meeting of the Manufacturers Division was well attended in spite of a competing convention held simultaneously in Chicago. Horace C. Krause, president of N.C.S.A., attended and gave a brief welcoming address. Chairman Irwin F. Deister (Deister Machine Co., Fort Wayne, Ind.) gave his annual report on routine work done during the year, on the recent board meeting, and on future plans. Wayne W. King (W. S. Tyler Co., Cleveland, O.) chairman of the membership committee, said that six members of the Division dropped out during the year, as might be expected in a non-exposition year, but three other companies joined for a total of 101 members. He introduced representatives of the three new member companies. J. R. Boyd, secretary, N.C.S.A., gave a brief report as did L. A. Eiben (Northern Blower Co., Cleveland, O.), chairman of the resolutions committee.

J. Craig McLanahan (McLanahan & Stone Corp., Hollidaysburg, Pa.), chairman of the nominating committee, made his report. All officers were reelected for a second year.

**Committee Reports** As usual committee reports were presented at the opening session. M. E. McLean (East St. Louis Stone Co., East St. Louis, Ill.) chairman of the Auditing Committee, reported that the association is in excellent financial condition. Norman C. Kelb (Cumberland Quarries, Inc.,

The 1953 board of directors, Manufacturers' Division, N.C.S.A. Bottom row (left to right): L. A. Eiben, Northern Blower Co.; Wayne W. King, W. S. Tyler Co.; Irwin F. Deister, re-elected chairman, N.C.S.A. Manufacturers' Division, Deister Machine Co.; J. R. Boyd, N.C.S.A. administrative director; B. R. Maloney, E. I. du Pont de Nemours & Co. — Second row: D. McM. Blackburn, Hendrick Manufacturing Co.; D. E. Rizor, Marion Power Shovel Co.; R. D. Ketner, General Electric Co.; J. Craig McLanahan, McLanahan & Stone Corp.; G. C. Holton, American Cyanamid Co.; W. E. Collins Jr., Atlas Powder Co. — Third row: D. H. Weber, The King Powder Co., Inc.; R. M. Dickey, Bucyrus-Erie Co.; H. W. Newton, Barber-Greene Co.; H. R. Harrington, Goodyear Tire & Rubber Co.; W. A. Rundquist, Pioneer Engineering Works Inc.; and G. H. Woodland, Chain Belt Co.

Indianapolis, Ind.), chairman of the Membership Committee, said that although membership in N.C.S.A. increased somewhat in the past year there are still many producers who would join if properly approached. He urged that each member make it his job to talk to other producers in his area. N.C.S.A. membership, said Mr. Kelb, represents the bulk of the tonnage of crushed stone produced but only a relatively small percentage of the actual number of producers. C. A. Gustafson (Callanan Road Improvement Co., South Bethlehem, N. Y.), chairman of the Accident Prevention Committee, reviewed the results of the safety contest and the safety record of the industry which have been published in full in these pages. He also pointed out the types of accidents found to be most prevalent and the fact that most of them could have been prevented by the wearing of hard hats, safety shoes, goggles, etc. While the safety record showed some improvement, said Mr. Gustafson, there is much room for progress. Warren C. Rowe (Rowe Contracting Co., Malden, Mass.), chairman of the resolutions committee, also gave his report.

**Coming Events** It was announced at this convention that the N.C.S.A. board of directors had accepted the invitation of its Canadian member, R. G. L. Harstone (Canada Crushed and Cut Stone, Ltd., Hamilton, Ontario), to hold its next mid-year meeting at the Seigniory Club between Ottawa, Ont., and Montreal, Quebec, on June 15, 1953. A meeting of the Manufacturers' Division will be held there on June 16. The 1954 annual convention and exposition will be held at the Conrad Hilton Hotel, Chicago, the week of February 21, the week after the combined conventions and exposition of the National Sand and Gravel and National Ready Mixed Concrete Associations. The 1955 annual convention will be held at the Netherland-Plaza Hotel in Cincinnati the week of February 6. The 1956 annual convention and exposition will be at the Conrad Hilton Hotel in Chicago but dates have not yet been determined.

**Business Conditions** The annual report on business conditions presented by Pres. Krause was a summary of reports from the regional vice presidents. Nearly all reported an increase in business over 1951 with plants operating at full capacity. Prices in this country were apparently nearly stationary with a slight drop in some areas. In Canada prices were up about 5 cents per ton. Near large cities construction was the largest user of stone with 40 to 50 percent; in other areas highway construction led with 40 to 60 percent. No great change was expected in 1953 in distribution but a slightly higher demand is anticipated. The productive capactiy of the industry was increased in all parts of the country in 1952.

Meeting of the N.C.S.A. board of directors, February 1, presided over by president Horace C. Krause (standing).

**Administrative Director's Report** J. R. Boyd, administrative director, briefly described the routine work done by the association's staff for the members and with the board of directors, the executive committee and other committees, including the many letters, reports, booklets, accident data and other information distributed. The business atmosphere, he said, has changed with the new administration and business now has a better chance of getting a sympathetic hearing. Industry has the right to tell government its views on important subjects in its own interest and that of the public. Mr. Boyd mentioned the fact that the Association, in behalf of the crushed stone industry, has filed with the Bureau of Internal Revenue objections to certain proposed percentage depletion regulations. The Association, he emphasized, can do only what its members want done and more information and comment from them will help it to do a better job.

**Elections** At the meeting of the board of directors on Sunday preceding the convention all officers were reelected for another year. They are: Horace C. Krause, president; James Savage, treasurer; J. R. Boyd, secretary. Also reelected were Mr. Boyd as administrative director, A. T. Goldbeck as engineering director and J. E. Gray as field engineer.

Representatives from winning companies in the 1951 N.C.S.A. safety contest who were present at the general luncheon to accept the trophy and certificate awards. Seated (left to right): John H. McKernan, New Haven Trap Co., Middlefield, Conn.; Charles S. Bass, New Haven Trap Rock Co., Plainville, Conn.; A. W. Heitman, Inland Lime and Stone Co., Gulliver, Mich. (trophy winner); Edgar Z. Cole, General Crushed Stone Co., Quakertown, Pa. — Standing (left to right): E. P. Snyder, North American Cement Corp., Hagertown, Md.; J. G. Wilson, Warner Co., Bridgeport, Pa.; Fred Warner, Warner Co., Bellefonte, Pa.; Harvey P. Jones, General Crushed Stone Co., Auburn, N. Y.; Merl Price, General Crushed Stone Co., LeRoy, N. Y.; and Oliver C. Dietschler, General Crushed Stone Co., Jordanville, N. Y.

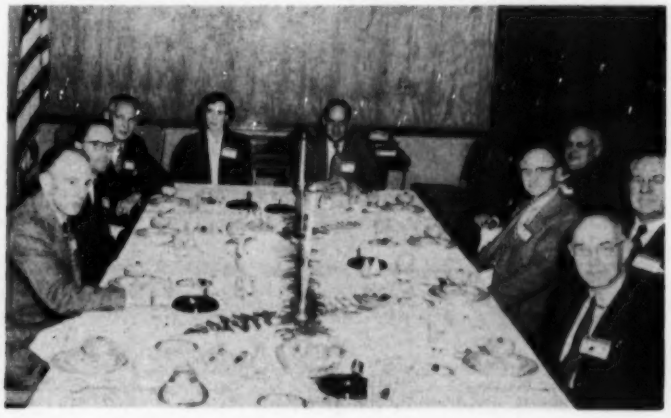
Regional vice presidents reelected were: L. J. Boxley (Southeastern); A. J. Cayia (Northern); E. Eikel (Southwestern); Wilson P. Foss III (Eastern); A. W. McThenia (Central); S. P. Moore (Midwestern); Warren C. Rowe (New England). Bruce Woolpert replaced Mrs. Anna R. Wilson as vice president for the Western Region.

Reelected to the executive committee were: H. C. Krause (Chairman), J. Reid Callanan, T. C. Cooke, Wilson P. Foss III, S. P. Moore, Russell Rarey, W. S. Weston, Jr., and W. F. Wise. Irwin F. Deister, reelected chairman of the Manufacturers' Division, continues to represent the Division on the N.C.S.A. executive committee. Otho M. Graves was reelected an honorary member.

**Percentage Depletion** Russell Rarey (Marble Cliff Quarries Company, Columbus, O.), chairman of the percentage depletion committee, gave what he called a progress report because percentage depletion can still be lost. He pointed out that increasing taxes make it impossible for producers to lay away sufficient funds for the replacement of depleted deposits, a problem most other industries are not called upon face. N.C.S.A. and other associations in the nonmetallic

C. A. Gustafson (left) chairman of the N.C.S.A. accident prevention committee, presented the N.C.S.A. safety trophy to A. W. Heitman, general manager of the Port Inland Quarry, Inland Lime and Stone Co., Gulliver, Mich., at the general luncheon. The Port Inland Quarry broke all safety records by operating 808,389 man-hours without a lost-time accident.

N.C.S.A. Accident Prevention Committee dinner meeting. Left to right, around the table are: Seymour Fleming, New York Trap Rock Corp.; H. H. Kirwin, Eastern Rock Products Inc.; Horace C. Krause, Columbia Quarry Co.; Beatrice G. Gay, N.C.S.A. administrative assistant; C. A. Gustafson, The Callanan Road Improvement Co., chairman of the committee; T. W. Jones, The New Haven Trap Rock Co.; H. F. Yotter, General Crushed Stone Co.; H. E. Rainer, Federal Crushed Stone Corp.; and J. R. Boyd, N.C.S.A. administrative director.



Ralph S. Hunt, representative, Deister Machine Co., McLanahan and Stone Corp., and Northern Blower Co., Buffalo, N. Y.; Cott Farrell, Easton Car and Construction Co., Easton Pa.; H. H. Wagner, Pennsylvania Stone Producers Assn., Harrisburg, Pa.; L. C. Mosley, Marion Power Shovel Co., Marion, Ohio; H. R. Harrington, Goodyear Tire and Rubber Co., Akron, Ohio; and William M. Avery, Pit & Quarry Publication, Chicago.

C. H. Wolfe, Greystone Granite Quarries, Henderson, N. C.; G. G. Daigh, Gardner-Denver Co., Washington, D. C.; Oscar Davis and W. E. Johnson, both of Travel Drill Co., Raleigh, N. C.; and H. D. Hedrick, Greystone Granite Quarries, Henderson, N. C.

Roy R. Porter, Euclid Road Machinery Co., New York City; Pasquale Nepa, North Jersey Quarry Co., Bound Brook, N. J.; Mark S. Fucci, North Jersey Quarry Co., Summit, N. J.; George Ransau, The Osgood Co., Ridgefield, N. J. and Melvin Haas, North Jersey Quarry Co., Morristown, N. J.

minerals industries awoke early to the realization that percentage depletion was necessary for their survival and all worked long and persistently to get it. Mr. Rarey also described the unfortunate wording on the effective date in the Revenue Act of 1951 which penalized those companies operating on other than a calendar year. It was, he said, a problem but the Association membership decided that equal benefits for all producers justified any risk of jeopardizing the gains already made and entered into the task of getting this inequity removed. Other associations joined in this successful effort. A questionnaire showed that 30 percent of N.C.S.A. members were being penalized and 70 percent voted for correction. Many of the 30 percent did not want the other 70 percent to jeopardize their gains but were overruled.

Mr. Rarey said that after percentage depletion was obtained some felt that the association should get out a bulletin interpreting its provisions but it was felt advisable for members to consult their own tax counsels. Regulations proposed by the Commissioner of the Bureau of Internal Revenue to clarify some of the provisions of the law did not meet with N.C.S.A. approval and a protest was filed. Up to the time of the convention no revised regulations had been issued. He pointed out that percentage depletion is a long-accepted principle of taxation covering the producers of about 60 different minerals and that support for it can be found in every state. The present administration, said Mr. Rarey, is for development, conservation, reasonable depletion allowances, etc., but efforts must be continued to support this benefit and a careful watch must be kept on any developments, new laws, etc., which might affect it. All interested industries, he urged, must be united in their support of percentage depletion.

At a later meeting D. L. Williams, chief of the Natural Resources Section of the Bureau of Internal Revenue, gave an interesting talk on percentage depletion.

**Legislative Outlook** An analysis of the legislative outlook, particularly with respect to changes which the Republicans may bring about, was presented to the meeting by John F. Lane of Gall, Lane and Howe, general counsel for the association. In Mr. Lane's thoughtful summary of the situation he pointed out that abrupt and radical changes are not likely because of the "razor-thin" majority which the

Ed Schwartz, Material Service Corp., Chicago; Paul M. Blaise, National Quarries, St. Michelle, Montreal, Canada; and George K. Escott, Associated Quarries & Construction Ltd., Toronto, Ontario.

Robert M. Koch, N.A.L.I. executive secretary; D. W. Williams, Chief, Natural Resources Section, B.I.R., Washington, D. C., who spoke on percentage depletion; and R. C. McGinnis, also of the B.I.R., Washington.

Republicans hold in both the Senate and the House of Representatives. He believes that the general public has lost sight of this precarious balance because of the landslide proportions of Eisenhower's election victory.

According to the speaker it is entirely likely that the same slim margins which the Republicans hold in both Houses will also prevail in committees. As a result, there is serious question as to the capacity of the party to discharge its responsibilities. The outcome of both major and minor issues, Mr. Lane predicted, will often be determined by absenteeism. In support of this view he quoted from a survey of the 82nd Congress which showed that no less than 48 roll calls were decided by hair-line margins. The average Senator and Representative, Mr. Lane said, votes on only four out of five roll calls.

Recalling that few men now in Washington have ever served under a Republican administration, the speaker expressed fear that even the basic teamwork between Congress and the White House may be in jeopardy. In off-year elections, Mr. Lane pointed out, the party in power customarily loses strength in Congress, and for this reason, if for no other, business men and others should temper their present mood of optimism. In Mr. Lane's opinion there is at present no assurance at all that the New Deal philosophy is a thing of the past.

In the remainder of his talk Mr. Lane presented a summary and interpretation of certain features of the presidential message. In regard to controls he warned his listeners not to "jump the gun" by assuming that violators will be any less subject to punishment because of the certainty that restrictions will be terminated. The speaker interpreted the president's address as indicative of a general "middle of the road" course in respect to most important issues. He expressed the belief that the most important legislation action undertaken by the new Congress will have to do with the Taft-Hartley Act, and he urged his listeners to give the question the very close attention it merits.

**Safety Awards** The general luncheon held February 4, which was presided over by Warren C. Rowe (Rowe Contracting Company, Malden, Mass.), featured the presentation of the 1951 N.C.S.A. annual safety contest awards. C. A. Gustafson (Callanan Road Improvement Company, South Bethlehem, N. Y.), chairman of the N.C.S.A. accident prevention committee, presented the awards to ten companies which maintained accident-free records during 1951.

The winner of the contest was the Inland Lime and Stone Company's

W. N. Carter, National Stone Co., Joliet, Ill.; C. E. Hogebloom, Consumers Co., Chicago; Martin Hammerschmidt, Elmhurst Chicago Stone Co., Elmhurst, Ill.; and Harold J. Graham, Lincoln Crushed Stone Co., Joliet, Ill.

W. B. Couch, Campbell Limestone Co., Liberty, S. C.; M. M. York, Allis-Chalmers Manufacturing Co., Boston, Mass.; H. T. Dill, Campbell Limestone Co., Gaffney, S.C.; and L. E. Lipphardt, Allis-Chalmers Manufacturing Co., Boston, Mass.

W. V. Pietsch, Bacon-Pietsch Co., Inc., New York City; John A. Braen, Samuel Braen Sons, Hawthorne, N. J.; and George R. McClure, Bacon-Pietsch Co., New York City.

Emmet Gallaway, Harristeel Products Co., New York City; Mrs. E. S. Gill, president, Gill Rock Drill Co., Lebanon, Pa.; and T. L. Shannon, Gill Rock Drill Co., Lebanon, Pa.

Port Inland quarry, Gulliver, Mich., with an outstanding record of 808,389 man-hours without a lost-time accident. A. W. Heitman, general manager of the Port Inland quarry, accepted the award for his company. The nine other winners received honorable mention certificate awards; these companies ranged from 327,395 to 22,000 man-hours without a lost-time accident.

The companies receiving honorable mention certificate awards, with number of man-hours without a lost-time accident were as follows: Bell Underground Limestone Mine, Warner Co., Bellefonte Pa.—327,395; Security Quarry, North American Cement Corp., Hagerstown, Md.—172,061; LeRoy Quarry, The General Crushed Stone Co., LeRoy, N. Y.—124,617; Rock Hill Quarry, The General Crushed Stone Co., Quakerstown, Pa.—92,812; Auburn Quarry, The General Crushed Stone Co., Auburn, N. Y.—89,873; Jordanville Quarry, The General Crushed Stone Co., Jordanville, N. Y.—76,039; Middlefield No. 1 Quarry, The New Haven Trap Rock Co., Middlefield, Conn.—57,299; Plainville No. 4 Quarry, The New Haven Trap Rock Co., Plainville, Conn.—47,756; and McCoy Quarry, Cedar Hollow Division, Warner Co., Bridgeport, Pa.—22,000.

**Safety Committee Dinner** At the N.C.S.A. accident prevention committee's annual dinner meeting held Tuesday evening, the committee decided to have several of its members begin to prepare papers regarding safety in quarrying operations. These articles are to be published in the N.C.S.A. bulletin during the year and distributed to the association's members. It is hoped that these papers will aid in the nationwide promotion of quarry safety. The committee also discussed the annual safety contest rules, which state specifically that a competing company must be enrolled with the Bureau of Mines in order to be eligible to receive a safety award. There was one eastern company in 1951 which had an outstanding safety record but was unable to win an award because it failed to properly enroll with the Bureau of Mines.

**Report of Engineering Director** Recent technical developments which may affect the use of crushed stone in the future were discussed by A. T. Goldbeck, engineering director, N.C.S.A., in his annual report. His talk, entitled *Some Straws in the Wind*, dealt with new aggregate specifications, prestressed concrete, slippery pavements, graded aggregate base courses, asphalt content determination, and ballast tests.

Mr. Goldbeck first reported on a new tentative specification for aggregates recently adopted by the A.S.T.M., which states that "coarse aggregate for use in concrete that will be frequently wet should be free of material that could react harmfully with alkalis in the cement. If such materials are present in injurious amounts, the coarse aggregate shall be rejected, or be used with a cement containing less than 0.6 percent alkalis calculated as sodium oxide or with the addition of a material that has been shown to inhibit undue expansion due to alkali-aggregate reaction."

Dr. L. Don Leet, associate professor of seismology, Harvard University, Cambridge, Mass., who presented a paper on delay blasting, and Jules E. Jenkins, Vibration Measurement Engineers, Chicago.

According to Mr. Goldbeck, this represents the first attempt for alkali-aggregate reactivity to be recognized in specifications. He stated that alkali silicates (for example, sodium silicate or water-glass) formed by this reaction in some way exert internal pressure in the concrete, thereby causing expansion, map cracking, and ultimate failure. The speaker claimed that the new specification, despite its saving clauses, would mean trouble ahead for some aggregate producers until the problem is solved in a proper manner. He added, however, that fortunately the specification is tentative, based on the fact that there is need for extended research in this field. He indicated that the so-called alkali-aggregate reaction, in many respects, is still a mystery which seems to be tied in with the compound composition of cement.

"In this same A.S.T.M. specification," the speaker continued, "the Los Angeles abrasion loss is set at a limiting value of 50 percent with, however, the stipulation that softer material may be used if satisfactory concrete strength may be obtained when using the concrete proportions selected for the work." He thought

Charles E. Proudley, North Carolina State Highway and Public Works Commission, Raleigh, who spoke on "Modern Construction of Pavement Bases With Crushed Stone"; W. T. Ragland Jr., Superior Stone Co., Charlotte, N. C.; and Luke Graham, W. E. Graham & Sons, Winston-Salem, N. C.

John H. Schmidt, North Jersey Quarry Co., Morristown, N. J.; L. O. McLean, The Osgood Company, Marion, Ohio; and L. R. Dohm Sr., North Jersey Quarry Co., Morristown, N. J.

that this was fair and would cause no trouble. Mr. Goldbeck also stated, "The gradation requirements in the A.S.T.M. specification have not been changed and are still those of the Division of Simplified Practice of the Department of Commerce (and . . . . ) no mention is made of flat and elongated pieces, (the reason being) that not too much is known about their real effect on concrete."

Mr. Goldbeck next discussed prestressed concrete, stating that its growing use should affect the crushed stone industry considerably. In explanation, he said, "Prestressed concrete differs from ordinary reinforced concrete in that the reinforcing steel, generally of very high elastic limit and strength, is placed in the beam in a stretched or stressed condition and is held in that condition until after the concrete has hardened, when the pulling force at the end of the steel is released and immediately the tension in the steel compresses the concrete; this prestressing makes for the most economic use of materials required to support a given load.

"In this type of construction," he continued, "it is advantageous to use concrete which is extraordinarily high in strength and which will maintain high rigidity with a minimum of plastic flow. Stone generally is an excellent aggregate for prestressed concrete because a rich concrete mixture made with resistant stone will develop high strength and rigidity."

In discussing slippery pavements, the speaker reported that some limestone sand concrete pavements have been definitely proved to become slippery in a relatively short time. "Apparently, what happens," he said, "is that the initially projecting particles of limestone sand (primarily calcite crystals) become worn to a mosaic flat surface so that the fine aggregate has no 'tooth' to provide traction. Consequently the coefficient of friction between tire and surface is reduced to a dangerously small value, particularly during the first stages of a rain when the surface is damp." However, Mr. Goldbeck made it very clear that not *all* limestone sands produce slippery pavements.

He continued, "If objection is made to limestone sand in bituminous mixes, a substitution for a part, say 50 percent of siliceous sand, would be very beneficial in overcoming slipperiness. However, its use is not always necessary, for entirely satisfactory bituminous concrete can be, and very frequently is, made with an all crushed aggregate."

Regarding road base coarse construction, the speaker reported "The graded aggregate base course, which

G. A. Austin, Consolidated Quarries Corp., Decatur, Ga. and Otho M. Graves, General Crushed Stone Co., Easton, Pa., both past presidents of N.C.S.A.

has been growing in use, seems to hold promise of providing a relatively inexpensive type of base which, when covered with a wear resistant surface such as bituminous concrete or portland cement concrete, becomes a pavement capable of carrying the heaviest of traffic."

He went on, "The gradation of the graded aggregate base or subbase under a durable wearing surface has been the subject of some engineering debate. On the one side is that group which would use a gradation so dense that it is impermeable, so that the water percolating through joints in the pavement is not allowed to reach the subgrade, which then is supposed to maintain its stability constantly. Others want a drainable sub-base, in which case the sub-base is best carried out to the ditches, thus providing prompt drainage laterally for any water which percolates down from above.

"The dense type retains water under the pavement and probably is softened to some extent, notwithstanding its dense and presumably stable gradation, while the more open gradation is little affected by water which percolates through cracks or joints in the surface. The dense gradation is subject to capillary action from the subsoil, the open gradation very much less so."

Mr. Goldbeck next discussed a new, quick, useful method for determining the asphalt content of a finished asphaltic mix without the time-consuming method of extracting the asphalt. He stated, "The method depends on the measurement of the solid volume (as contrasted to bulk volume) of a sample of loose bituminous mix. Knowing the volume and weight, the density may be computed. This density is then com-

New York Trap Rock Corporation members attending the convention included: (Sitting, first row, left to right), Charles Leroy, Ralph Owen, Joseph Dooley, Thomas Murray, and Vincent Antonelli. (Second row), Edward Delaney, F. J. Buffington, W. P. Foss, Jr., J. A. DeBoyace, Caesar Lodini, Stirling Tomkins, Dexter Bullard, and W. P. Foss, III., president of the firm. (Standing, back row) M. C. Dow, Joseph McGuire, R. J. Sherry, A. W. Komonchak, W. C. Ferguson, John Restein, Paul Lewis, S. Fleming, F. J. Perini, Clarence Stetser, and Edward Sullivan.

pared with that of a mix with a known asphalt content and any difference indicates a difference in asphalt content." The speaker then considered two methods for measuring the solid volume of mixtures—one in which the volume is determined by water displacement after thoroughly evacuating entrapped air bubbles, and the other which utilizes a pressure meter similar to that used for the measurement of entrained air in fresh concrete.

Mr. Goldbeck also referred to a trend toward the use of smaller sizes than the ¾- to 2½-in. size formerly used for railroad ballast. In addition, he indicated that there seems to be a growing feeling that the Los Angeles abrasion test now specified by the A.R.E.A. may not be adequate for testing ballast, and investigations regarding the matter are now under way by that organization. Their study involves the use of a special repeated load applying machine, simulating the action of loads frequently applied to the track. Mr. Goldbeck felt that this test would produce more stringent specifications for ballast, especially as applied to cementing value. Consequently he concluded that certain ballast producers may expect trouble.

In concluding his remarks, Mr. Goldbeck reported that the construction outlook for 1953 was highly favorable, and that a record total of about $33,000,000,000 new construction was anticipated, including $3,000,000,000 for highway projects. Thus, he felt the crushed stone industry would have a good year. He also mentioned that the association's fifth short course, held in Washington in January, was highly successful: about 160 association members and engineers from state highway departments and other governmental agencies participated in the technical sessions.

**Report of Field Engineer** Joseph E. Gray, N.C.S.A. field engineer, departed from the usual practice of presenting a general review of problems by discussing one important technical subject, namely, *Current Practices in Use of Quarry Fines in Bituminous Concrete*. He stated that although the question "are screenings a satisfactory aggregate for bituminous concrete?" is a fairly serious one, many producers have answered it complete and satisfactorily.

Mr. Gray first cited examples of failures of bituminous concrete pavements in which the aggregate was composed entirely of stone screenings. The reason for instability, he stated, was simply that the screenings lacked the proper variation in gradation and consequently segregated, thereby developing an open or porous pavement.

The speaker then discussed at length three methods for procuring fine aggregates that are well graded from maximum to minimum sizes with as little variation in individual size fractions as possible. The methods including grading band within a specification, the blending of screenings with natural sand, and the use of manufactured stone sand as a fine aggregate.

The first method, used by the Corps of Engineers and some highway departments, was described by Mr. Gray in these words: "A gradation specification is first set up for the aggregate; then samples of the aggregate that are proposed for the job are tested for gradation, and if they comply with the specifications, mixes are designed. If the mixes, when tested, meet the design criteria for stability, density and flow, the gradation of the aggregate used becomes a part of the specifications with very narrow tolerances. In other words, there is no deviation from the job mix formula once it is established. Thus, the job mix range actually becomes the specification. Under this method of control, any type of fine aggregate may be used —screenings, stone sand, natural sand, or a combination of fine aggregates."

According to Mr. Gray, the second method, which is used in many states, permits the use of screenings in bituminous concrete provided that the mix meets specifications. In Texas, for example, the design criteria for hot-mix asphaltic concrete, type D, calls for a density of 94 to 98 percent and an aggregate gradation of ½-in. maximum size with 50-65 percent retained on the No. 10 sieve and a dust content (minus 200 mesh) of 2 to 10 percent.

While the specifications do not require it, nevertheless it is a common practice there to use some natural silica sand ("blow sand") in the

Hamilton Lott, Palmetto Quarries Co., Columbia, S. C., and Luther F. Miller, New York Trap Rock Corp., Newburgh, N. Y.

mix, particularly sand that is high in the 40 to 80 and 80 to 200 mesh sizes. These "carrier" sizes tend to lubricate the mixture, thereby producing a more workable mix; they also effect optimum density. In general, mixes of this type consist of 60 percent coarse aggregate, 25 percent screenings, and 15 percent blow sand, Mr. Gray stated.

According to the speaker, stone producers using screenings in bituminous concrete exercise considerable care in the preparation of screenings; they are made generally from the secondary rather than primary crushing operations. However, he stated that the indiscriminate blending of natural sand with screenings is not a solution to the problem, because the use of very coarse sand can increase the voids in the mix. He recommended that natural sand should be used in amount and sizes that supply the deficiencies in the screenings. He also mentioned that fine aggregates should not be blended in stockpile.

Continuing the discussion of the second method, Mr. Gray considered the effect of maximum size of coarse aggregate in an asphalt mix. He stated that probably the greatest factor contributing to the successful use of screenings has been the amount of coarse aggregate used in the mix. He pointed out that the amount of coarse aggregate that can be used depends upon its maximum size. Citing California Highway Department specifications, he stated that the average amount of fine aggregate to be used with the various maximum sizes is as follows (considering the No. 8 sieve as the dividing point between coarse and fine aggregate in bituminous mixes):

| Maximum Size | Total Passing No. 8 % |
|---|---|
| No. 4 | 77 |
| ⅜" | 56 |
| ½" | 51 |
| ¾" | 44 |

The table shows that as the maximum size increases, the percentage of fine aggregate required decreases, thereby reducing the effect of variations in the fine aggregate or screenings.

In describing the third method, namely the use of stone sand, Mr. Gray referred to the important work done in Ohio in this field. He pointed out that in Ohio "quarry screenings, as such, are not considered a suitable aggregate for bituminous concrete, and their use has not been permitted for a number of years. However, manufactured stone sand is used extensively. The gradation requirements for manufactured stone sand are as follows:

| Passing | Retained | Percent |
|---|---|---|
| No. 4 | .. | 100 |
| 4 | 6 | 0- 5 |
| 6 | 8 | 0-10 |
| 8 | 16 | 15-40 |
| 16 | 50 | 25-60 |
| 50 | 100 | 5-35 |
| 100 | 200 | 2-10 |
| 200 | .. | 0- 7 |

"The manufacture and use of stone sand for bituminous concrete has several features which are simple but effective in assuring a fine aggregate of proper and uniform gradation in the bituminous mix," he continued.

"In the manufacture of the stone sand, all of the material passes a No. 6 sieve. This small top size produces a stone sand that is free from the troublesome segregation experienced when screenings of ⅜ in. maximum size are used, for the particles with the relatively large mass have been removed. The wet process of manufacture is used so the amount of minus 200-mesh material is reduced and carefully controlled. This also materially reduces the amount of segregation caused by the very fine particles.

John P. Flynn, Pit and Quarry Publications, New York, and Arthur C. Butler, secretary, National PAR Committee and director of the National Highway Users Conference, Washington, D. C., who spoke on "Project—Adequate Roads".

"Another important factor contributing toward the elimination of segregation is moisture. In processing, the stone sand is passed through a drag box, or classifier, for controlling the minus 200-mesh material, and it is then stockpiled for dewatering. Actually, this stockpiling is more than dewatering, for the material is allowed to remain in stockpile until the moisture content has been reduced to 4 or 5 percent. With this moisture content, there is no flow of water downward in the stockpile. The fine particles adhere to the coarser particles so that, when a shovel digs into a pile of the stone sand and there is some caving in, the appearance of the entire pile is one of uniform gradation. Likewise, this material can be hauled, stockpiled at the asphalt plant, loaded into bins, and fed onto the cold feed elevator without segregation.

Mr. Gray closed his remarks with the following conclusions: "(1) quarry run screenings are often not a satisfactory aggregate for bituminous concrete; (2) screenings resulting from secondary crushing may be used by blending with natural sand for the fine aggregate and using as much and as large a maximum size of coarse aggregate as will reduce the variation in gradation of the screenings to within allowable limits; and (3) manufactured stone sand has been found to be an acceptable fine aggregate for bituminous concrete."

**Employer-Employee Relations** In a very informative talk entitled *Employer-Employee Relations*, L. R. Boulware, vice-president in charge of employee and plant community relations, General Electric Company, discussed the major problems of this field and his company's efforts in solving them. At the outset he stated that the solutions should be in the interest not only of the employer and employee but also of the general public as well. He further declared that employers should sell themselves and their company to the employees with the same fervor that they sell their products and services to their customers. He claimed that much remains to be done in this respect.

Mr. Boulware outlined four major objectives that General Electric has recognized for improving employee relations. First, he said his company makes every effort to do right voluntarily regarding wages, fringe benefits, and other material job aspects. In doing this it considers all sources of available information in serving the balanced best interests of all concerned. Next, the company attempts to do right voluntarily in the sphere of human association; thus the employee is made to feel important, regardless of his part in the overall scheme. Third, General Electric tries to carry understanding and aid beyond the working place and out into the community. In this respect the firm aims to become an integral part of the community and to have its employees do like-

O. M. Stull and J. C. Lawrence, both of Liberty Limestone Corp., Buchanan, Va.

wise. Fourth, every effort is put forth in educating the employees in general economics. Mr. Boulware stated that the main emphasis is in teaching the values of our country's free enterprise system. At this point the speaker emphasized that without this sound base of widespread economic education, there could never be good employee or community relations for business. He claimed that through training in basic economic principles, individuals would be better able to judge whether businesses were working competently in their interest and in the general public's interest.

In carrying out this last objective, Mr. Boulware stated that his company has encountered numerous problems, most of which are based on the public's lack of clear understanding of business in general, of the value of freedom itself, and of such concepts as money, taxes, incentives, savings, risk, profit, and loss. He said that the biggest unsolved problem facing business today is the individual's poor grasp of the truth of our free enterprise system. Mr. Boulware highlighted his remarks by placing the complete blame for this dilemma on businessmen, who, he said, have considered their main job to be engineering, production, marketing, and finance at the expense of neglecting the employee. He felt that this neglect on the employer's part is serious and should be remedied at once. In fact, he expressed belief that it has become a matter of self-preservation for free business, free markets, and ultimately free citizens.

Mr. Boulware next discussed a number of economic concepts and principles which should be covered in any general course of employee instruction, including money, inflation, government financing, direct taxes, indirect taxes, corporation taxes, price, rent, and wage controls, profit, and subsidies. Above all, he said, the course should point out the difference between public enterprise (collectivism) and private enterprise. Regarding the former concept, he stated that all forms of collectivism are opposed to individual choice, to individual incentive and initiative, and to the free and competitive market; in other words, the collectivists want the people to be subservient to an all-powerful government. He claimed that without being aware of it, we have been trending towards this state; consequently, he felt that steps should be immediately taken to reverse the trend.

In concluding his remarks, Mr. Boulware presented three reasons why employers should foster broad economic education among their employees. First, it is absolutely necessary if the employer is to establish good employee relations; second, it is vital for our survival as a free nation; third, it is his duty, as it is the duty of every citizen, to do as much as possible along this line. He added that this endeavor will work in the interest of the employer's own individual freedom and material well-being.

C. H. Duesing, Atlas Powder Co., Chicago, and A. J. Cayia, president, Inland Lime and Stone Co., Manistique, Mich.

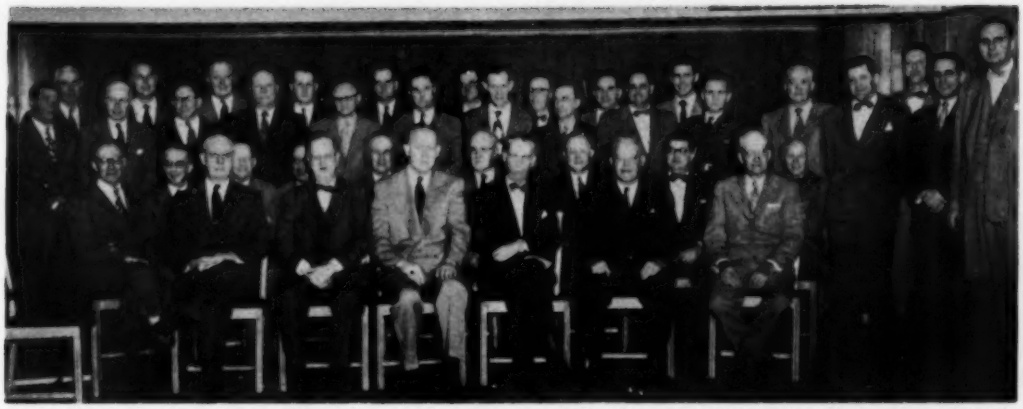
**Art of Selling** Harry Bowser, director of sales education, Sloane-Blabon Corporation, New York, addressed the group on the subject *Little Things That Make the Sale*. He emphasized the point that the highly competitive sales era in which we live means that the art of selling has come to play a major role in all kinds of business, even the crushed stone industry.

Mr. Bowser began by stating that the sales profession is a most challenging and interesting profession because it is fast moving, ever changing, deals with new things, and above all deals with people. He then proceeded to give numerous valuable selling tips, many of which should benefit the crushed stone producer considerably. For example, he stated that a good salesman should show enthusiasm and even excitement regarding his company's name and product. He should especially emphasize the new and unusual features of the product. In addition, he should handle customers the way they want to be handled. He should also create landings frequently during the sale, that is, allow the customer to express an occasional viewpoint or idea. He should help the customer to buy rather than to confuse him. Then, following a successful or unsuccessful sale, he should discern the features in his sales approach which led to the sale or helped to lose it. Thus the salesman should constantly take inventory of his methods. Throughout the presentation Mr. Bowser emphasized the fact that most sales are often determined by a number of little things, for example, a courteous smile or a polite "thank you".

Ralph Morden, Marble Cliff Quarries Co., Columbus, Ohio; Joseph E. Gray, field engineer, N.C.S.A.; and Frank Longabaugh, Marble Cliff Quarries Co., Columbus, Ohio.

**Heated Screens** The important role that the heated screen is playing in helping producers meet the expanding demand for small size crushed stone was discussed by J. V. Owens, vice-president, Eastern Rock Products, Inc., Utica, N. Y., in a talk entitled *Heated Screens—Their Design, Application, and Performance*. Based upon several years of experience with this relatively new development, Mr. Owens pointed out the merits of the heated screen and also discussed several actual installations.

The speaker stated that the single-phase, dry-type transformer, producing a secondary voltage of 5 to 15 volts, is most commonly used in heated screens; it supplies current varying from 1,000 to 4,000 amp.



The General Crushed Stone Company, Easton, Pa., was well represented at the N.C.S.A. meeting. Members from that firm present included: seated, left to right, C. J. Heiser; H. M. VanCleve; M. Bovee; W. H. Litteer; I. H. Boggs; Redington Moore, secretary-treasurer; C. H. Beacham; O. E. Benson, president and general manager; G. E. Schaefer; O. M. Graves, chairman of the board; A. L. Herster; John Rice Jr., vice-president; C. A. Blowers; A. G. Seitz; and J. W. Harward. Standing, left to right, E. Z. Cole; Burr Shaver; W. J. Hinds; E. M. McDonough; O. Dietschler; C. T. Johnson; Harry McGuirk; D. C. Hickey Jr.; H. F. Yotter; Merl Price; E. E. Dotter; A. R. Nash; H. P. Jones; J. P. Cox; G. L. Ransier; M. H. Alderman; F. J. Harvey; W. R. Smallwood; J. F. Cibula; J. W. Richards; J. C. Hayes; F. J. Pollack; E. D. Barton; and C. A. Reid. Other members attending the meeting but not in the photograph were J. P. Martin and H. M. J. Ruch.

By adjusting the voltage and current, the temperature of the heated screen can be varied from 100 to 300 deg. F. He stated that the optimum temperature depends upon such factors as the material's surface moisture, temperature, and screen analysis; tons per hour and rate of travel of the feed; and the atmospheric temperature and humidity.

He reported that this new development has been applied to wire cloth ranging from 1-in. square opening down to 80-mesh, with the ½-in. to 10-mesh range being the most applicable. Of the two types of wire cloth used (plain steel and stainless steel), the latter is more economical and practical, in spite of its higher initial cost, the speaker stated. Since stainless steel has twice the electrical resistance of plain steel, one half as much current is needed; consequently smaller transformers, copper lead wires, and bus accessories are needed. Furthermore, the better wear and corrosion resistant properties of stainless steel offer other advantages.

In discussing the merits of the heated screen, Mr. Owens pointed out that by eliminating blinding of moist material, the heated screen produces a high quality screened product. Furthermore, through its use the producer can reclaim fine particles (minus ⅛ in.) for use in stone sand, asphalt filler or agstone; formerly this size was often washed into settling basins and thus represented waste or else very low-value sanding material.

Mr. Owens stated that the initial investment and operating cost is relatively small; the heating equipment for a 4- by 8-ft. screen costs approximately $1,000, which is roughly half the cost of screen, motor and drive. The heating cost averages less than 45 cents per hour, and it may be as low as 16 cents, he reported. He also stated that the heated screen is easy to install and needs no more attention and maintenance than the unheated type. It was also stated that the heated screen does not create an additional safety hazard (electrical shock) due to the high amperage—low voltage characteristic of the power.

Mr. Owens concluded by discussing installations of heated screens at New York Trap Rock Corporation's Stoneco plant, The General Crushed Stone Company's Watertown, N. Y., plant, and two of his company's plants. At one of the Eastern plants, three heated screen units are used; one 4- by 10-ft. unit operates at a cost of 16 cents per hour, while a 5- by 14-ft. unit operates at a cost of 27 cents per hour. The screens are used to produce ¼- to ⅛-in. material, ⅛-in. to 20-mesh material, and minus 20-mesh material. The latter product is especially valuable for fine asphalt mixes and agstone, he stated.

George D. Lott Jr., Palmetto Quarries Co., Columbia, S. C., who presided over the excellent operating session held Wednesday morning.

In each of the installations cited, Mr. Owens reported that the heated screen has more than paid for itself in a period of two years or less.

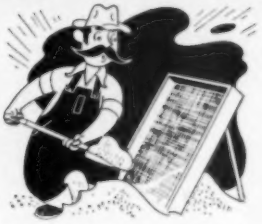
In a question and answer period that followed, Mr. Owens mentioned that electric current heating can be applied equally well to multiple-deck screens (either the entire unit or any of the decks). He also stated that hot air is not as efficient as electricity for heating screens.

**Safety** In his paper entitled *The Mechanics of Establishing and Operating a Good Safety Program in a Small Operation,* T. W. Jones, production manager, New Haven Trap Rock Co., New Haven, Conn., expressed a firm belief that production and safety go hand in hand. Quoting Heinrich's ratio, the speaker said that the direct cost of an accident itself is only one-fifth the total cost when you add to it loss of production due to damaged machinery, interruption of flow, and similar factors. Thus, he said, if an accident costs $200, the total cost to the company is likely to be around $1,000—the additional $800 representing loss in production.

"Regardless of the size of the operation," Mr. Jones went on, "there should be a safety man. He may be

(*Continued on page* 132)

# Screenings



by William M. Avery

SADDLED as we are with the occasional chore of trying to inject a bit of fun into the mostly pretty solemn capers of the pit and quarry industries, we should undoubtedly be fairly tolerant of the professional humorists with whom we may tangle in the line of duty. In a dim, detached sort of way, we know what they're up against, and even when they're at their worst, we persist in believing they are more to be pitied than censured.

Just lately, however, on separate occasions we've had the bad luck to run afoul of two members of the profession who managed somehow to exhaust our capacity for tolerance. The first lad was billed as a "philosopher, humorist", and the program notes referred to him as a modern-day Mark Twain. The second bloke was labeled "humorist, raconteur", and the fine print in the program pointed out that *he* has been called "the successor to Benchley".

Maybe it was because the program promised so much that these fellows seemed to deliver so little. The first guy laughed in an amiable sort of way at his own jokes, and even though the audience wasn't having much fun, it could derive a little satisfaction from the knowledge that *he*, at least, was having a good time. But the second guy both looked and sounded as though he wished to blazes he had been somewhere else, and long before he had finished his stint, we, and most of the other unwilling victims, were more than ready to wish him Godspeed.

In fact, the more we think about that second bird, the madder we get. It was a banquet affair, and everybody was in a pretty good mood right up until the pale shadow of Benchley started dripping ice water on the proceedings. Even supposing that the fellow *had* been funny, we have a strong hunch that the ladies, who made up a sizable portion of the audience, would overwhelmingly have preferred dancing in their formals to rolling in the aisles.

### Same Old Moon

FOR ordinary purposes the moon is just a little off our editorial beat, but we can't resist adding a brief footnote to the recent flurry of publicity received by our nearest neighbor in the solar system. In discussing the details of topography which should be visible through the world's largest telescope, a spokesman of the National Geographic

Society said that features "as small as the Pentagon Building" would be revealed.

Somewhere or other *we* had latched onto a vague impression that the Pentagon was at least two or three times as big as the moon. Anyhow, we anxiously scanned the photos taken through the big telescope, and we didn't see hide or hair of *any*thing as big, or as ugly, or as depressing as the Pentagon.

### Skid-doo

WE were mighty pleased the other day, at least momentarily, to read in one of the shelter magazines that a successful electric roadsander has been developed for automobiles. "There, now," we thought, "should be a sizable new market for sand," but we might have known that the last material on earth anyone would dream of using in a sander would be sand. Sure enough, down in the fine print it says you mustn't use sand with this rig. Instead you buy a "special grit which will neither pack nor freeze," and which will, we confidently anticipate, sell at about the same price per pound as anchovies.

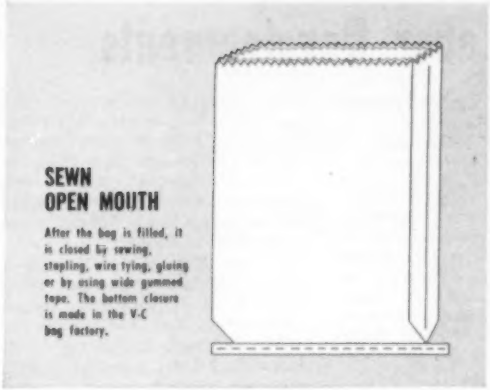
### Hair Raising

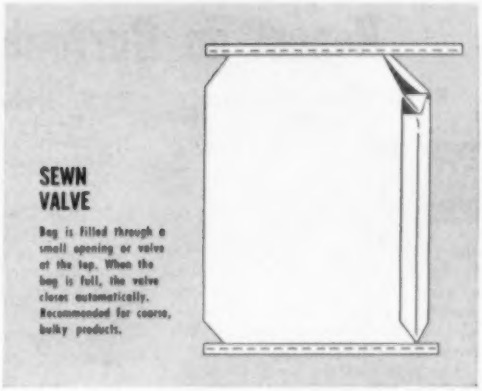
A PRESS clipping from New York State tells about a fascinatin' row between a couple of gravel dealers and the Seneca Nation Council over several thousand dollars worth of material removed from the Cattaraugus Indian Reservation. No scalps have been lifted yet, but this is just exactly the sort of situation that gets the braves all worked up in most of the horse operas we have seen. Worst part of it is that

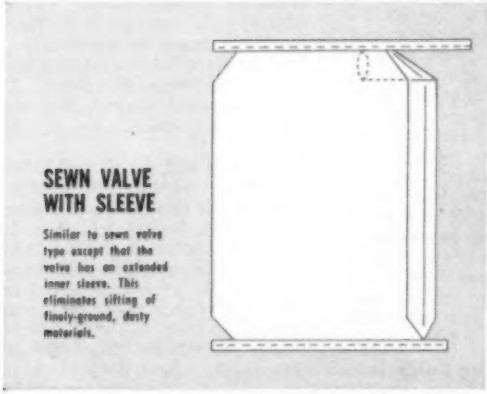
if the going gets really tough, those gravel boys can't even count on the U.S. Cavalry to charge up in the nick of time. If the dilemma were ours, we think we'd shell out the wampum!

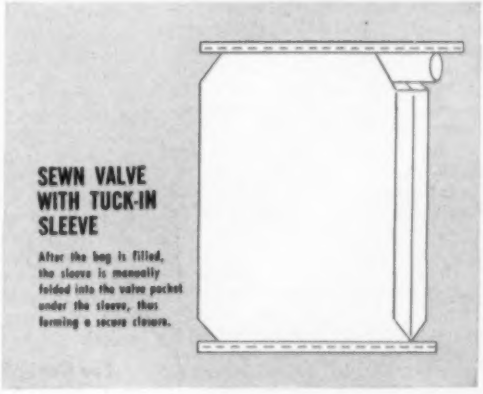
### For the Birds

ACCORDING to a recent issue of *This Week*, the foundations of ancient structures in London are in danger of being undermined because "hungry pigeons, fattened up by last summer's American tourists, are now desperately pecking at the building to get the lime in the mortar." We've known for some time that the British were in serious straits, but it's hard to believe that they have actually fed American tourists, objectionable though they may be, to their pigeons. Even the pigeons might agree that it just wouldn't seem like cricket.


SEWN
OPEN MOUTH
After the bag is filled, it is closed by sewing, stapling, wire tying, gluing or by using wide gummed tape. The bottom closure is made in the V-C bag factory.


SEWN
VALVE
Bag is filled through a small opening or valve at the top. When the bag is full, the valve closes automatically. Recommended for coarse, bulky products.


SEWN VALVE
WITH SLEEVE
Similar to sewn valve type except that the valve has an extended inner sleeve. This eliminates sifting of finely-ground, dusty materials.


SEWN VALVE
WITH TUCK-IN
SLEEVE
After the bag is filled, the sleeve is manually folded into the valve pocket under the sleeve, thus forming a secure closure.

# Which V-C® Multiwall Bag is Best for You?

Packaging is easier and more economical when you use the right type of multiwall bag. Each type has advantages for special kinds of jobs. If you have not reviewed your packaging requirements lately, it will pay you to consult a specially-trained V-C representative. Without cost or obligation, he will make recommendations that may save you money.

V-C Multiwall Bags are made of top-quality materials, carefully constructed to stand rough, tough treatment. In addition, V-C is prepared to make suggestions on how to modernize your trade design to give it extra sales appeal.

Expert designing, highest quality bag materials, painstaking construction, careful printing, speedy service and delivery... all of these add up to unqualified satisfaction. That's what you get when you use V-C Multiwall Bags.

**Virginia-Carolina Chemical Corporation**

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# Report on Current Labor Developments

## No More Wage or Salary Controls

**By S. Herbert Unterberger**
S. Herbert Unterberger & Co.
Industrial and Labor Economists
Washington, D.C. - Philadelphia, Pa.

ON Monday the President announced in his State of the Union message, "I do not intend to ask for a renewal of the present wage and price controls on April 30, 1953. In the meantime, steps will be taken to eliminate controls in an orderly manner, and to terminate special agencies no longer needed for this purpose."

On Friday of the same week, the President issued his executive order suspending all wage and salary stabilization rules and regulations immediately. That order permits employers to put into effect the wage or salary adjustments proposed in petitions still pending before the stabilization agencies, including retroactive adjustments. Because many of the proposed adjustments are based on union contracts which required approval of the proposed increase before they could be made effective, the President's order specifically approves them.

Furthermore, the order appears to permit the granting of adjustments in wages, salaries, or other elements of compensation which were formerly denied by the stabilization agencies. Finally, the order permits the granting of adjustments previously withheld because, at the time, they were not allowable under the stabilization policies.

There is one important thing which the President's new order does not do. It does not legalize wages which violated the regulations during the period that those regulations were in effect. As a matter of fact, the order specifically preserves the right to continue all proceedings against violators. And it also permits the initiation of new violation proceedings.

Actually, very few new proceedings are likely to be started. The chairman of the Wage Stabilization Board has already said that it is his intention to start new proceedings only against flagrant violators.

It has been widely predicted that the elimination of wage and salary controls will call forth a wave of wage increases. This is based on the knowledge that many union contracts provide the right to reopen when controls are abandoned. Furthermore, many employers faced with labor shortages in particular areas or occupations may be required to increase wages substantially to hold their present employees and to attract required additional workers. When contracts expire or reopen, unions may be inclined to make extraordinarily large demands, either to make up for lost time or because no governmentally imposed limits are around which will make those demands obviously unattainable.

The Administration did not place much stock in these predictions. Apparently they relied on the fact that no key wage bargains are now pending. For example, it will be some months before the next steel, coal or railroad wage bargains will be made. Unless the change in the cost-of-living index (discussed in greater detail later) provides the reason for reopening the contracts in the automobile industry, they will not be renegotiated until 1955. It is hoped that by the time these important negotiations take place, the economy will be sufficiently stabilized so that the wage adjustment which results will not start a new wage-price spiral.

## The Cost-of-Living Confusion

At least since January, 1950, it has been known that the government's cost-of-living index was being revised. It was no surprise, therefore, when the government announced that after December, 1952, it would no longer issue its old index or its interim adjustment index, which was a half-way revision of the old index, and that beginning in January, 1953, it would only issue the revised, modernized new index.

Least of all was this a surprise to Walter Reuther, newly elected president of the C.I.O. and for some years president of United Automobile Workers. It will be remembered that it was his 1949 agreement with General Motors Corp., then under the leadership of Charles E. Wilson, the new Secretary of Defense, which started the widespread movement to include clauses in union contracts tying wages to the cost-of-living. It was the importance of this contract and those which followed in its wake that made it virtually impossible for the government to avoid permitting other companies and unions to adopt similar programs even after the wage stabilization program was in force. As a matter of fact, the stabilization policy permitted unions which made agreements later to get a better deal. While the Auto Workers' contract required that wages go both up and down with changes in cost of living, later contracts were approved which allowed wages to rise but did not require them to decline.

Because it fears that the cost of living may decline, the Auto Workers Union is unhappy about its contract which does not expire until 1955. Although the change in the index had been expected and, in fact, anticipated in the arrangements with the company, the union tried to use the fact that the old index on which their contract was based would no longer be available as a basis for cancelling the contract with which they were dissatisfied. To have their position prevail, they were threatening a strike in the auto industry.

To avoid such labor strife which could have very serious consequences especially at this time and because other union leaders felt that the rapid elimination of the old index created many serious adjustment problems, the President ordered the Bureau of Labor Statistics to continue to publish the old index for another six months. Thus, through June, 1953, at least, both the old index and the new index will be issued.

Unfortunately, the President's order came so late that the necessary data for compiling the old index for January had not been collected, and it will take time to catch up. It now appears that the old index for January, which would normally be issued on February 22, will not be available until early in April. The February and March figures will also be late in appearing. The Bureau of Labor Statistics hopes to catch up so that they will be able to issue the April index on the regular May 22 release date.

Now that the old index is to be made available, the Auto Workers Union is not satisfied, claiming that the damage caused by the delay cannot be repaired. Actually they are probably worried that they have done themselves a disservice. The likelihood is that the old index will show a smaller rise, or perhaps a greater decline, than the new index. This is because food prices are falling and food prices play a greater role in the old index than in the new. It will be no surprise if the Auto

(*Continued on page* 131.)

Can you use a man with 87 years of experience?
He represents Socony-Vacuum — a company which has served industry since 1866... provided the first lubricants for contractors' equipment.
This man is backed by more time-tested products than any other oil company representative... by more graduate lubrication engineers... by more technical service laboratories... in short, by the *world's greatest lubrication knowledge and engineering service!*
We sincerely believe that a man with such a background can surely help increase the efficiency of all your equipment— reduce your maintenance costs— consistently make your operation more profitable. *Why not give him a trial?*
SOCONY-VACUUM
Correct Lubrication for Contractors
WORLD'S GREATEST LUBRICATION KNOWLEDGE AND ENGINEERING SERVICE

THE FLYING RED HORSE COMPANIES: SOCONY-VACUUM OIL COMPANY, INC., MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

# Quarry Operator Increases Efficiency Through Use of Two-Way Radio System

THE Carbon Limestone Company, Lowellville, Ohio, has recently begun using General Electric two-way radio to increase its operating efficiency. The company's quarry operations cover 2,500 acres and produce 1,500,000 tons of limestone per year.

A General Electric base radio station has been installed in the company's main office; and mobile radio-telephones are in each of seven locomotives, two loading shovels, and the quarry foreman and quarry superintendent's trucks.

Because the main office, crushing and screening plant, and repair shop are several miles from the quarry, previous communications between these points were difficult Now operators of the radio-equipped vehicles can talk directly with each other or the main office.

According to Carbon Limestone president, F B. Thacher, efficient operation of the plant depends upon an unbroken cycle of operation—from removal of overburden through quarrying and milling operations to shipping. Any interruption along the line in many instances results in a shutdown of all other operations.

"Before we had the radio system," he said, "a locomotive could be derailed as far away as two miles from the repair shop, with considerable lost time involved in reporting the accident. Now the locomotive operator can call for immediate assistance, and thus greatly reduce the time required to put the plant in operation again."

"In one case, a break in a large air line supplying the drills was reported and repaired in less than 30 minutes, as a result of the two-way radio system Such speed would have been impossible without radio," he added.

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The domestic sulphur industry produced 436,143 long tons of native sulphur and 22,459 tons of recovered sulphur (of a purity of 97 percent or greater) during the month of November, 1952, according to reports of producers to the U. S. Bureau of Mines. Producers' stocks of native sulphur decreased, and at the end of November stood at 3,053,843 tons.

One of seven Carbon Limestone Company's locomotives equipped with two-way radio.

General view of firm's quarrying operation, showing electric power shovel and locomotive, each equipped with two-way radio sets.

Ken Dickson operates the base radio station in the company's main office, from which he talks directly to the locomotive and shovel operators, the quarry foreman, and the superintendent.

Quarry superintendent George Kuhn uses two-way radio in his truck to maintain instant contact with the company's main office, locomotives, loading shovels, and his assistant.

# Expanded Shale Institute Members Map Policies at Mid-Year Meeting

HELD at Dallas, Texas, in early December, the midyear convention of the Expanded Shale Institute was attended by directors and other representatives of all 12 member companies in the United States and Canada. High on the business agenda were discussions designed to help in formulating the future policies of the newly-formed organization. This was the first formal meeting of the group since the appointment of Frank G. Erskine, formerly with the Washington office of the Portland Cement Association, to the full-time position of managing director of the Expanded Shale Institute.

As indicated by a substantial working budget recommended by Mr. Erskine, the Institute's efforts in the immediate future will place a great deal of emphasis on research, as well as on the prompt and proper dissemination of information developed through research. The program contemplated will include full co-operation with universities and other organizations interested in research involving lightweight concrete. Immediate steps will be taken to obtain fire ratings on masonry unit walls and structural concrete incorporating expanded shale aggregates. An intensive effort will also be made to collect and correlate existing information which may be helpful in determining a uniform standard of quality for expanded shale. Although processing by rotary kilns is at present one of the prerequisites for membership in the Institute, the discussions at the Dallas meeting indicate that there is a good deal of sentiment favoring the adoption of a product quality standard in place of this requirement.

One important item of business transacted at the Dallas meeting was the election of W. Edward Barney, executive vice-president of Hydraulic-Press Brick Co. until his retirement several years ago, as an honorary director of the Institute. Among old timers in the industry Mr. Barney is widely known as "Mr. Haydite" because of his early association with Stephen J. Hayde, inventor of the original process for manufacturing expanded shale aggregate. During his long career Mr. Barney served the industry at plants located in St. Louis, Cleveland, and Kansas City.

Other official actions included the appointments of the following permanent committees and committee chairmen: budget and finance, H. H. Allen; by-laws and rules, Alex McVoy; technical problems, Cedric Willson; and promotion and publications, Alex T. Mickle.

S. Carl Smithwick, president of the Institute, presided at the mid-year convention, and the Featherlite Corporation and Texas Industries, Inc., both with main offices in the city of Dallas, were hosts for the meeting. During their stay in the city the members inspected a number of commercial and industrial buildings and warehouse structures exemplifying the use of expanded shale aggregate in masonry units and in structural concrete. A highlight of the tour was the 42-story Republic National Bank Building now under construction and said to be one of the outstanding structures of its type in America. Except for the structural steel framework, the building will be of expanded shale concrete throughout.

(*Continued on page* 131.)

Alex T. Mickle, chairman, promotion and publications.

H. H. Allen, president, The Featherlite Corporation, Dallas, Tex., chairman of the budget and finance committee, Expanded Shale Institute.

Cedric Willson, vice-president and manager, Engineering Division, Texas Industries, Inc., Dallas, Tex., chairman of the technical problems committee.

Alex R. McVoy, vice-president, Texas Industries, Inc., Dallas, chairman of the by-laws and rules committee, Expanded Shale Institute.

• A big blast breaks the quarry wall to supply material for the Kenney Dam, under construction as a preliminary step in the construction of the hydroelectric power plant of the Aluminum Company of Canada.

# Aluminum Co. of Canada Power Project Calls for Big Earth-Fill Dam

## *Earthmovers used to produce 3,825,000 cu. yd. of material*

KEY to the giant Aluminum Company of Canada hydroelectric project, located in the mountainous wilderness back of the north coastal port of Prince Rupert, is the huge Kenney Dam now under construction, which will plug the canyon of the eastward-flowing Nechako River and reverse a 5,000-square-mile drainage area.

The dam will back up water in a 110-mile chain of lakes which will be tapped at their western end by a 10-mile tunnel piercing a mile-high mountain range between the lake area and the coast. The water will plunge 2,600 ft., passing through a subterranean powerhouse and spinning turbine generators which will eventually produce more than 1,000,000 horsepower of electric energy to supply Aluminum Company's projected aluminum smelter at Kitimat on a nearby tidewater arm of the Pacific.

Kenney Dam is of the earthfill type and will rise 317 ft. from a narrow base at the canyon floor. Crest length of the dam will be 1,550 ft., with a crest width of 40 ft. The dam will contain 3,825,000 cu. yd. of material and its dimensions will make it one of the largest earthfill dams on the continent.

Producing and supplying sand, gravel, clay, and rock for the project involves large pit-and-quarry operations, all of which are carried on within a few miles of the dam site. Fill requirements for the dam amount to 2,050,000 cu. yd. of porous sand and gravel, 585,000 cu. yd. of pit run gravel, and 500,000 cu. yd. of impervious clay material.

The rock for the fill is practically at hand, being quarried within a few hundred feet of the dam crest on both sides of the canyon. Early in May the first rock was produced with a 200-ton dynamite shot, the largest blast ever fired in Canada. A second blast of 150 tons was made

• Blasted rock is dozed and fed to a 3½-cu. yd. shovel which loads the haul trucks for transport to the site of the dam.

• A load of gravel coming up from the Kamano River bed. Crawler tractors pulling 15-cu. yd. scrapers are used to scoop out the material, which is then stockpiled for crushing and grading.

• Loading fine stone is accomplished by an overhead loader mounted on a crawler tractor. This unit fills the haul trucks from the stockpiles for transportation to the dam.

three weeks later, and a third blast of 175 tons took place in the middle of June. Slow-velocity dynamite with 40 percent ammonia was used in all three blasts and average production obtained was 1 cu. yd. of rock per 1½ lb. of powder.

To save time and explosives, the coyote hole method of blasting is used. Main drifts are driven 200 to 300 ft. in depth, 50 ft. apart, with 4- by 6-ft. drifts cut at right angles to the main drifts. Whole boxes of powder are set in enlargements of the cross cuts and sealed with sand and rock. The resulting blast lifts and shatters the entire face of the rock wall, breaking off huge chunks of rock.

Before this method of blasting is done, the area to be shot is stripped by a fleet of seven International TD-24 crawlers equipped with bulldozers. The slopes to be stripped are so steep in some sections that the TD-24's pushing away the overburden are anchored from the top of the slope by winch cables attached to other tractors.

Blasted material is shovel-loaded into 10- and 17-cu. yd. end-dump diesel trucks for the 6,000-ft. round-trip haul to the dam. Six shovels with bucket capacities of 2½ and 3½ cu. yd. are used for loading and quarrying. International TD-24 crawler tractors are employed in cleaning up around the shovels and bunching rock for loading operations.

A fleet of 31 trucks haul this material on a 50-ft. divided four-lane road which is constantly watered for better traction and to eliminate dust.

A central dispatch tower assigns all haul units to shovels for loading at the quarry site. All shovel numbers are painted on the side of the tower, and returning haul units are directed to a shovel by placing the haul unit number under the number of the desired shovel. This system has proved to be remarkably efficient in speeding up hauling operations.

The 690,000 cu. yd. of pervious gravel and sand fill are being produced from pits opened in the many low hills upstream from the dam site. At present, most of the material is produced at one pit and screened into specified grades, as follows: sand up to ¾-in. gravel, ¾- to 3-in. gravel, and 3- to 10-in. gravel. This material is stockpiled near the dam site and loaded by small shovels and an International TD-14A tractor equipped with an overhead loader into light dump trucks for the short haul to the dam. These pits also produce the 580,000 cu. yd. of pit run gravel which will be placed in the dam structure.

About a mile from the dam site a large deposit of inorganic glacial till with a moisture content of 4 to 6 percent provides more than enough high-grade clay for the dam's impervious core, which will require a total of 500,000 cu. yd. of this material.

The clay is prepared for loading by a scarifier pulled by an International TD-24 tractor. As this unit passes over the deposit, the clay is broken up and boulders are removed. Since specifications call for more moisture, the clay is wetted down before loading to meet the moisture content requirements.

In June eight Le Tourneau 12-cu. yd. Tournapulls were hauling the clay; six more units will be added as the requirements increase. The Tournapulls are push-loaded by two International TD-24 crawlers. Loading runs vary in length from 60 to 400 ft., since selective loading is practiced to obtain the desired balance of material in each load. The haul units make the 2-mile round trip from clay pit to dam site in about ten minutes.

Approximately 110 miles west of Kenney Dam the big Kemano construction operations are under way, requiring large amounts of sand and gravel for concrete work. This is the site of the underground powerhouse, and from here the power transmission line will wend its lofty course over a mile-high mountain range to span the 50-mile distance to Kitimat.

Production of sand and gravel for the extensive concrete work at the Kemano River is also under way. Three International TD-24 crawlers pulling 15-cu. yd. scrapers dig and haul the sand and gravel from the river to a stockpile. Crushing and separating is done by a riverside plant which is equipped with a Universal 20-36 Primary jaw crusher, powered by an International UD-18A diesel engine, and an 880 Senior Gravelmaster, powered by an International UD-24 diesel. The latter unit produces sand and two grades of gravel. Plant production is approximately 65 cu. yd. per hour.

The remaining third of the sand and gravel required for concrete work will be produced from small pits strung along the ten-mile road from Kemano Camp to the tidewater dock.

## Warner Co. Rod Mill

(*From page* 97.)

include charging the mill with rods each week, periodic bolt tightening, and the replacement of liners at intervals of about eight months.

The June, 1952, records are typical of the performance of the mill. Screen areas are shown below:

Altogether, the Warner Company is well pleased with the results in the simplicity, low costs, and satisfactory product of this installation.

| | Amperes | RPM | Quantity |
|---|---|---|---|
| Maximum | 180 | 28 | Very heavy grit |
| Minimum | 140 | 22 | Medium grit |
| Average | 156 | 24 | |

## Bulletin Describes Courses Of Lincoln School of Welding

A new bulletin has just been published by The Lincoln Electric Company, Cleveland 17, Ohio, descriptive of the Lincoln School of Welding.

About 35,000 men and women from 19 different countries have been students in this school, which was started in 1917, when the United States Army purchased welding equipment from Lincoln and specified in the purchase that Lincoln train soldiers to be welders.

| Pass | Finest | Coarsest | Average | Average of Blended Conc. Sand | Special Test | |
|---|---|---|---|---|---|---|
| | | | | | Feed | Product |
| ⅜ in. | 100% | 100% | 100% | 100% | 100% | 100% |
| No. 4 | 94 | 75 | 86 | 95 | 18 | 77 |
| No. 10 | 50 | 31 | 43 | 72 | 1 | 27 |
| No. 16 | 32 | 14 | 27 | 60 | ..... | 16 |
| No. 20 | 23 | 11 | 20 | 50 | ..... | 12 |
| No. 30 | 17 | 8 | 14 | 37 | ..... | 9 |
| No. 50 | 9 | 5 | 7 | 14 | ..... | 4 |
| No. 100 | 4 | 2 | 3 | 3 | ..... | 2 |

# WASHINGTON NEWS LETTER

## Tax Cuts vs. the Balanced Budget

By S. HERBERT UNTERBERGER

IT now appears clear that the principal battle in the new 83rd Congress will be over the issue of which comes first—the tax cuts or a balanced budget. This will not be a fight between Republicans and Democrats, but rather between Republicans and Republicans. It should be remembered that in the presidential campaign the Republicans promised both tax cuts and a balanced budget. Thus, the proponents of each side are on safe ground when they point out that, to keep faith with the voters, their views must prevail.

President Eisenhower took sides quickly in this battle. In his State of the Union message, he listed the tasks involved in achieving economic health and strength in the following order:

"1. Reduce the planned deficits and then balance the budget, which means, among other things, reducing federal expenditures to the safe minimum;
2. Meet the huge cost of defense;
3. Properly handle the burden of our inheritance of debt and obligations;
4. Check the menace of inflation;
5. Work toward the earliest possible reduction of the tax burden;
6. Make constructive plans to encourage the initiative of our citizens."

It did not escape the attention of members of Congress, or of others who were hoping for an early reduction in the tax burden, that balancing the budget received first priority and reducing taxes rated only fifth place in the President's list. If there was any misunderstanding about the significance of these relative positions, it was quickly dispelled a few paragraphs later, when he said:

"A balanced budget is an essential first measure in checking further depreciation in the buying power of the dollar. This is one of the critical steps to be taken to bring an end to planned inflation. Our purpose is to manage the Government's finances so as to help, and not hinder, each family in balancing its own budget."

The President felt it necessary to point out that most of the problems with the budget were not of his own making. He reminded Congress that the outgoing Administration proposed a deficit of 9.9 billion dollars and that the bills for payment of nearly 80 billion dollars of obligations undertaken by the previous Administration will be presented for payment during the next four years.

He then went on to state unequivocally that "Reduction of taxes will be justified only as we show we can succeed in bringing the budget under control. As the budget is balanced and inflation checked, the tax burden that today stifles initiative can and must be eased.

"Until we can determine the extent to which expenditures can be reduced, it would not be wise to reduce our revenues."

Then, to indicate that he did not intend to be hurried, he added, "The tax structure as a whole demands review. The Secretary of the Treasury is undertaking this study immediately. We must develop a system of taxation which will impose the least possible obstacle to the dynamic growth of the country."

This last is no mean task. Taxation experts, accountants, economists, lawyers and business men have been working for years on the problem of an equitable tax structure which will not inhibit economic growth. They are still very far from an agreed upon solution. In subsequent statements, the Secretary of the Treasury made his full agreement with the President's position perfectly clear.

Nevertheless, Congress, particularly the members of the House of Representatives, want action on taxes. Bills have been introduced which look as though they have a very good chance of passing the House. The Senate, however, appears to be far more conservative. Under the leadership of Senator Taft, they will probably go along with the President.

As of this writing, the picture for this session of Congress appears to be about as follows:

1. No very large budget cuts appear likely in the near future. This is because most savings can result only from increased efficiency which, in turn, cannot be accomplished quickly. It will require study, reorganization and the habit of tight-fisted operation.
2. No new tax cuts appear likely in this session of Congress. Despite much impassioned talk, the outlook still appears to be that excess profits taxes will die, as scheduled, as of July 1, while individual income taxes will be reduced, as scheduled, as of January 1, 1954. Even this schedule may be delayed somewhat. There is practically no serious thought being given to change in corporation income taxes, capital gains taxes or excise taxes.

To students of taxation it will be no surprise if at the end of a year of Republican rule the total tax burden will be greater than it was at the beginning. This will not be the fault of the new Administration in Washington, nor, for that matter, anyone's fault. It will result primarily from the fact that while the Federal government is searching for ways and means to cut taxes, most state and local governments are searching for new and additional sources of tax revenues.

The state and local governments do not prefer this situation: they are being forced into it. They are the victims of two trends: (1) the rapidly increasing cost of public improvements; and (2) the rapidly increasing need for facilities such as schools, hospitals, roads, etc. In addition, the normal costs of operating their governments are rising. The demand for better salaries for teachers, police and firemen, and other government employees, cannot be withstood forever, even at the expense of reducing the quality of these services.

Just as in the case of the Federal government, the only real hope of reducing the tax burden is to secure increased efficiency. Even then no drastic reduction in taxes can be expected. But, at the very least, for each hard-earned dollar paid in taxes, the citizen and the businessman might get a dollar's worth of service.

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The Ideal Cement Company was one of three Denver companies which were awarded certificates of management excellence for 1952 by the American Institute of Management of New York.

# Power in the pit... and plenty of it

On the tip of Long Island, N. Y., the Colonial Sand & Stone Co. uses this Manitowoc Speed Crane to load sand onto a conveyor belt. The 2½-yd. bucket handles 350 yds. an hour, nine hours a day.

Foreman Lawrence Miguez says, "It's an easy machine to operate and it has plenty of power to back it up." It gets that power from a Caterpillar D17000 Diesel Engine.

This 200-HP Diesel engine has the power and the stamina for a tough job like this. Right at sea level, in sand and mud all day, its special Caterpillar oil breather and air cleaner keep dust and grit out, keep that bucket moving without down-time. And the engine can run at top efficiency on low-cost No. 2 furnace oil, too: its single orifice injection valves will not foul or clog even on inexpensive non-premium fuels.

Leading manufacturers of excavating equipment can furnish this same kind of reliable, economical Caterpillar power in the machines they build. It will pay you to *specify* it when you buy. Your Caterpillar Dealer will be glad to demonstrate why. And he's the man to see for service, too, and for those genuine Caterpillar parts which guarantee you the same Caterpillar quality that's built into every one of these Diesel engines and electric sets.

CATERPILLAR, PEORIA, ILLINOIS

**CATERPILLAR**

REG. U. S. PAT. OFF.

**Diesel Engines**
**Electric Sets**

# Installation and Maintenance of Anti-Friction Bearings

**Part I**

## THE HISTORY OF ANTI-FRICTION

**By JOSEPH BRUSCA**
Senior Division Engineer
SKF Industries

The basic principles of design and application of anti-friction bearings were conceived many centuries ago. They originated for one purpose only—*to lessen friction.*

History records that down through the ages men desired to move heavy objects across the earth's surface. Desired, but not always achieved. Regardless of available manpower, *sliding friction* between the earth's surface and the object made it impossible.

As far back as 1100 B.C., we know that such friction was reduced by the insertion of rollers between the object and the surface over which it was being moved. In 1100 B.C., the Assyrians and Babylonians used rollers to move enormous stones for their monuments and palaces. Down through history is recorded many similar examples of man's war on friction.

In modern times, the first important victory over friction was the invention of the wheel. However, the early wheel was based on sliding friction and a long time elapsed before this principle was refined. Later wheels rendered friction a "body blow" when they were rested on an assembly of balls or rollers. Cycling and skating, which involved personal effort, boosted interest in anti-friction bearings—and started long years of slow development.

Anyone who has tried to move a heavy object by sliding, readily appreciates the ease with which it can be done when rollers are used. Weight of the object is not a factor—as long as both the rolling elements and the surface over which they pass can support it without being pressed out of shape.

Place a heavy book on a flat, smooth table and as you push it across that surface, notice the amount of effort required. This is sliding friction.

Now, place several round pencils under the book. Note how easily it can be moved. This is the difference between sliding friction and rolling motion.

You will note that when pushing the book with the pencils as rolling elements that a tracking effect was present. The book would go forward or backward with ease.

Now, substitute several balls for the rollers, and note the added ease with which the book moves. Also, note the fact that it can be moved in any one direction as easily as in another direction. These advantages are due to point contact when using balls, rather than line contact when the pencils were used.

In review—we noted that sliding the book on the surface required a certain effort—that rolling it over the pencils required less effort but that the direction was limited—and finally, when we substituted the balls, less effort was required and direction was unlimited.

The book, the surface and the pencils or balls are the three important, basic parts of a ball or roller bearing.

If you performed this interesting experiment, you noted several important factors. First, that the book would run off of the pencils and the balls. Second, and this may not have been so apparent, that there was a tendency for one rolling element not to follow or "track" the same as the other rolling element. This was true of both pencils and balls—but to a lesser degree in the ball experiment.

Let us imagine that the book is curled into a circle. The book is then equivalent to the inner ring of a ball bearing.

While our imagination is at play, picture the table top curled into a position around the book—and in so doing, the balls would take the position in between the book and the table top.

Actually, we have converted our early experiment into a basic ball bearing in design. The book becomes the inner ring—the table the outer ring—and the balls the rolling elements.

This experiment, however, does not illustrate one other important part of a bearing. You will recall that we noted that the pencils or balls did not "track"—i.e., roll in the same direction, or keep the same distance apart. To take care of this condition, the bearing requires a cage and its function is to keep the rollers or balls in their proper position. In common usage are the words cup and cone. The cup being the outer race and the cone the inner race.

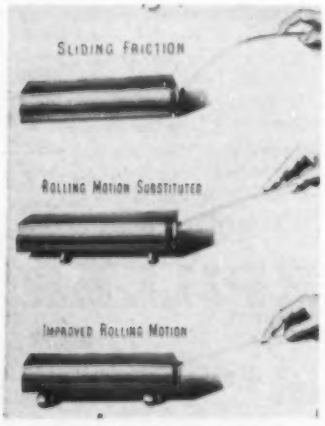



Fig. 1. Sliding vs. rolling motion.

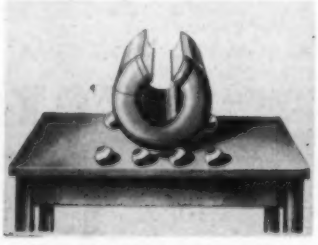


Fig. 2. Book becomes inner ring.

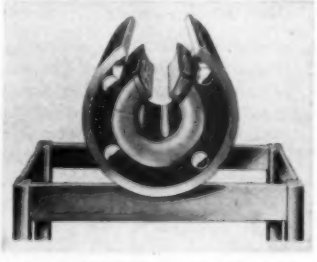


Fig. 3. Surface becomes outer ring.

## BEARING TYPES AND THEIR FUNCTIONS

Machine designers have a wide variety of bearing types from which to choose. Each bearing type has characteristics which make it the best choice for a *certain* application. The original selection was made to assure maximum bearing performance. Therefore, a replacement should be made with the same type bearing. The following resumé of the functions of each bearing type will aid you to better select your replacements.

Fig. 4. Self-aligning ball bearing. Fig. 5. Single row, deep groove ball bearing.

**Self-Aligning Ball Bearings** The *Self-aligning Ball Bearing*, with two rows of balls rolling on the spherical surface of the outer ring, compensates for angular misalignment resulting from errors in mounting . . . shaft deflection . . . and distortion of the foundation. It is impossible for this bearing to exert any bending influence on the shaft . . . a most important consideration in applications requiring extreme accuracy, at high speeds. Self-aligning Ball Bearings are recommended for radial loads and moderate thrust loads in either direction.

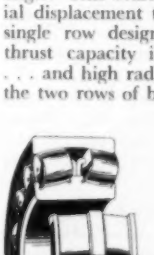
**Single Row, Deep Groove Ball Bearings** The *Single Row, Deep Groove Ball Bearing* will sustain, in addition to radial load, a substantial thrust load in either direction . . . even at very high speeds. This advantage results from the intimate contact existing between the balls and the deep, continuous groove in each ring. When using this type of bearing, careful alignment between the shaft and housing is essential. This bearing is also available with seals, which serve to exclude dirt and retain lubricant.

**Angular Contact Ball Bearings** The *Angular Contact Ball Bearing* supports a heavy thrust load in one direction . . . sometimes combined with a moderate radial load. A steep contact angle, assuring the highest thrust

Fig. 6. Angular contact ball bearing. Fig. 7. Double row deep groove ball bearing.

capacity and axial rigidity, is obtained by a high thrust supporting shoulder on the inner ring and a similar high shoulder on the opposite side of the outer ring. These bearings can be mounted singly or, when the sides are flush ground, in tandem for constant thrust in one direction; mounted in pairs, also when sides are flush ground, for a combined load . . . either face-to-face or back-to-back.

**Double Row, Deep Groove Ball Bearings** The *Double Row, Deep Groove Ball Bearing* embodies the same principal of design as the single row bearing. However, the grooves for the two rows of balls are so positioned that the load lines through the balls have an outwardly converging contact angle. This bearing has a lower axial displacement than occurs in the single row design . . . substantial thrust capacity in either direction . . . and high radial capacity due to the two rows of balls.



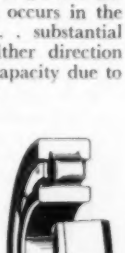


Fig. 8. Spherical roller bearing. Fig. 9. Cylindrical roller bearing.

**Spherical Roller Bearings** The *Spherical Roller Bearing*, due to the number, size and shape of the rollers, and the accuracy with which they are guided, has unexcelled capacity. Being inherently self-aligning, angular misalignment between the shaft and housing has no detrimental effect and therefore, the full capacity is always available for useful work. The design and proportion are such that, in addition to radial load, heavy thrust load may be carried in either direction.

**Cylindrical Roller Bearings** The *Cylindrical Roller Bearing* has high radial capacity and provides accurate guiding of the rollers, resulting in a close approach to true rolling. Consequent low friction permits operation at high speed. Those types which have flanges on one ring only, allow a limited free axial movement of the shaft in relation to the housing. They are easy to dismount even when both rings are mounted with a tight fit. The double row type assures maximum radial rigidity and is particularly suitable for machine tool spindles.

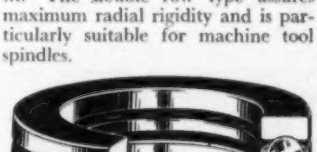


Fig. 10. Ball thrust bearing.

**Ball Thrust Bearings** The *Ball Thrust Bearing* is designed for thrust load in one direction only. The load line through the balls is parallel to the axis of the shaft . . . resulting in high thrust capacity and minimum axial deflection. Flat seats are preferred . . . particularly where the load is heavy . . . or where close axial positioning of the shaft is essential; as for example, in machine tool spindles.

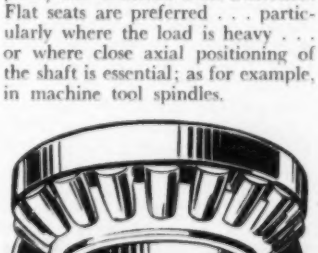


Fig. 11. Spherical roller thrust bearing.

**Spherical Roller Thrust Bearings** The *Spherical Roller Thrust Bearing* is designed to carry heavy thrust loads, or combined loads which are predominantly thrust. This bearing has a single row of rollers which roll on a spherical outer race with full self-

alignment. The cage, centered by an inner ring sleeve, is constructed so that lubricant is pumped directly against the inner ring's unusually high guide flange. This insures good lubrication between the roller ends and the guide flange. The spherical roller thrust bearing operates best with relatively heavy oil lubrication.

## STANDARD AND PRECISION BEARINGS

In your daily work, you may deal with standard bearings and precision bearings. Actually, a standard bearing is a very precise and exact piece of workmanship. A precision bearing is manufactured just *that much more precise and exacting.*

There may be people who believe that a precision bearing is just a "smooth running" bearing. It is! But — there is a great deal more to the performance of precision bearings than "smooth running."

In order to understand the full meaning of the term precision bearings, we must first have a working knowledge of the important dimension tolerances of standard bearings.

## STANDARD BEARING TOLERANCES

Let us consider two important dimensions of a certain bearing, i.e., the bore of the inner ring and the outside diameter of the outer ring. The nominal dimension of the bore is 45 mm. or 1.7717″. The O.D. of the outer ring is 85mm. or 3.3465″.

It would be ideal if standard production methods would permit the manufacture of all inner and outer rings of this bearing to these exact dimensions. However, this is not commercially possible. Therefore, we must introduce the word TOLERANCE. Tolerance means "how much deviation from these nominal dimensions shall be permitted or tolerated." Permissible deviations or tolerances were established many years ago by Engineering Societies. Today, all manufacturers of high-quality bearings adhere to these tolerances.

The tolerance for the bore of this bearing is plus 0 and minus 5 ten-thousands (.0005″). Thus, when measuring the bore of this bearing it must never be greater than 1.7717″—but can be as small as 1.7712″. *However, it cannot be smaller than* 1.7712″.

Similarly, the outside diameter has a tolerance of plus 0 and minus 6 ten-thousands — or 3.3465″ to 3.3459″. *It cannot be larger than* 3.3465″.

It must be kept in mind however, that the tolerances given in the catalog are average tolerances, arrived at by taking several measurements of the bore and OD across different diameters.

All important dimensions of standard ball and roller bearings are held to close tolerances. The tolerance values of these dimensions that concern bearing users are published in catalogs, as follows:

Bore Tolerance
Outside Diameter Tolerance
Ring Width Tolerance

Many bearings are manufactured to tolerances even closer than the accepted standard. In comparing the measurements of 50 bearings selected at random from a lot of 500 it was found that 80% were within one half of the standard limit. Similarly, the same sampling of the bore of fifty other bearings showed the same high percentage of bore tolerances which also were within one half of the standard limit.

In addition to the above dimensional tolerances, bearings are held to a close radial runout value. For measuring the radial runout (running accuracy) of the inner or outer ring of a radial bearing, the bearing is lightly pressed on an arbor having a very slight taper. This arbor is supported between centers. Then, an indicator is applied on the center of the outer ring.

The radial runout of the inner ring is the difference between the maximum and the minimum indicator readings while rotating the inner ring one revolution and holding the outer ring stationary.

The radial runout of the outer ring is measured by the same method except that the inner ring is held stationary while rotating the outer ring one revolution.

## STANDARD BEARINGS VS. PRECISION BEARINGS

Now, after reviewing the important dimensional tolerances of standard bearings, we can compare them with the tolerance values of precision bearings—*and note the difference.*

Briefly, one might explain the difference between standard and precision bearings by stating that precision bearing tolerances are reduced to approximately one half of the tolerances of standard bearings.

However, even though many standard bearing dimensions are within the tolerance of precision bearings, all precision bearings are manufactured in a special department devoted exclusively to precision bearings.

Precision bearings are specified for many applications in many industrial fields. The following *few* examples, of themselves, signify the reasons for a precision bearing specification—

Turning and Boring Spindles
Grinding Spindles
Woodworking Spindles.

These applications are synonymous with high-speed . . . accurate workmanship . . . and fine finish. If the spindle of such equipment is not accurate, the finished work will obviously not be accurate. If the spindle is not rigid, the product will show signs of chatter and tool marks which will be transmitted by vibration from the spindle to the work.

It is important to remember that the finest bearing manufactured will not compensate for worn bearing seats or worn housings. Spindle bearings can only function efficiently when mounted on bearing seats and in housings of like accuracy of the bearing.

Therefore, when precision bearings are replaced, the dimensions of the shaft and housing should always be carefully checked.

## INTERNAL BEARING CLEARANCES

Bearing clearance is the amount one bearing ring moves in relation to the other under a given small measuring load in a radial direction (radial clearance), or in an axial direction (axial clearance). For radial bearings, the radial clearance is of primary importance. As a general rule, the radial clearance in ball bearings should be close to zero when the bearing has been mounted and has reached its temperature equilibrium. However, a small preload usually has no damaging effects.

**Comparison of Standard and Precision Bearings**

| | *Standard Bearing* | *Precision Bearing* |
|---|---|---|
| Bore Tolerance | + 0<br>— .0005″ | + 0<br>— .0002″ |
| O. D. Tolerance | + 0<br>— .0005″ x .0006″ PWD. | + 0<br>— .0003″ |
| Width (Inner Ring and Outer Ring) | + 0<br>— .005″ | + 0<br>— .005″ |
| Radial Runout (Inner Ring) | .0006″ Max. | .0002″ Max. |
| Radial Runout (Outer Ring) | .0014″ Max. | .0004″ Max. |

In roller bearings, which deflect far less under load than do ball bearings, a certain small internal clearance should be left in order that the bearing will not develop too much heat at high speeds. At normal speeds, however, the roller bearings are usually preloaded, in order to obtain maximum rigidity. In single row angular contact ball bearings, one cannot speak of internal clearance except when the bearings are mounted, as one bearing is always opposed by another in order to control the internal clearance.

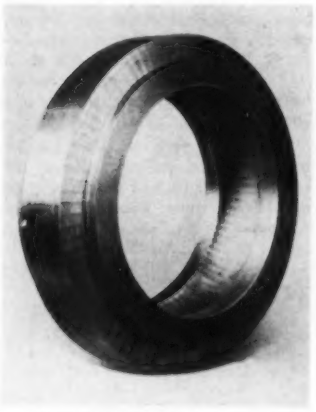


Fig. 12. This ring was machined in a lathe equipped with a spindle of ordinary design. Bearing yield, or deformation resulted in heavy chatter marks.

Fig. 13. This ring was machined in a lathe of same make and model except that it was equipped with precision spindle bearings. The same cutting tools were used, and the speeds, and feeds and spindle diameter were the same. No chatter marks resulted.

## MOUNTING OF BEARINGS —SHAFTS and HOUSINGS

**Mounting Designs** The successful application of a ball or roller bearing depends to a great degree on two factors—

—the mounting design

—and the accuracy of the various machined surfaces upon which the bearing is supported.

Unless care is exercised in both designing the bearing mounting and machining the various parts, a premature failure may result. This is true, even though the capacity of the bearing specified may be well above the applied load.

The narrow width of a ball or roller bearing provides a comparatively small surface area for the applied load. Hence, the unit pressures are high and must be uniformly distributed to the supporting surfaces of both the shaft and the housing. Therefore, it is evident that both the inner and outer rings must be properly mounted on the shaft and in the housing respectively. Serious distortion is eliminated and uniform distribution of the load is obtained.

This same care must also be used with respect to the pedestal on which the bearing housing is mounted. Distortion of the bearing housing will occur, unless the pedestal is firm and the surface straight.

A bearing housing should be designed to permit a simplified assembly and disassembly of the component parts. Such design should also provide for simple methods of casting, with few machined surfaces—to reduce costs to a minimum.

**Cleanliness** The importance of protecting the bearing from the intrusion of dirt and other foreign matter cannot be over emphasized. Seals must be designed to prevent the entrance of any type of foreign matter to the bearing. Dirt will act as a perfect lapping compound and will grind the bearing surfaces. This will result in excessive wear of the rolling elements and of the inner and outer rings. In addition, foreign matter will contaminate the lubricant—and gradually break down the oil or grease to the point where effective lubrication cannot be obtained. Dirt will also cause noisy operation.

The cavity in the housing around the bearing should be large enough to provide for an adequate amount of lubricant. Seals should be effective in retaining the lubricant in the housing.

**Mounting and Dismounting** Bearings may be mounted directly on the shaft or on tapered adapter sleeves.

When mounted directly on the shaft, the inner ring should be located against a shaft shoulder of proper height. Proper shaft shoulder heights are listed in bearing catalogs. This shoulder must be machined square with the bearing seat and a shaft fillet should be used. The radius of the fillet must clear the corner radius of the inner ring. This also applies when mounting the outer ring in the housing.

Generally speaking, bearing applications have a rotating inner ring with a stationary load applied to the bearing. In such cases, it is necessary to mount the inner ring with a press fit on the shaft—and the outer ring with a slip fit in the housing.

Creeping will occur when the inner ring is loose on the shaft. This will result in over heating, excessive wear and contact erosion between the shaft and the inner ring. The explanation of creeping-action can be simplified by the use of this comparison. Compare the action of an internal gear in mesh with a planet pinion. If the planet pinion (representing the shaft) had one tooth less than the internal gear (representing the bearing inner ring) the latter would slip back one gear tooth in each full revolution of the shaft. Hence, the speed of the shaft (planet gear) would be greater than the speed of the inner ring (ring gear)—and sliding would take place.

Therefore, it is an obvious conclusion that a preventive measure must be taken to eliminate creeping and its harmful results. *Mount the inner ring with a sufficient press fit on the shaft!* This will insure that both inner ring and shaft act as a unit—and both rotate at the same speed.

If the applied load is of a rotating nature, for example — vibrating screens where unbalanced weights are attached to the shaft, then the outer ring becomes the critical member. In order to eliminate creeping in this case, the outer ring must be mounted with a press fit in the housing. The rotating inner ring, when subjected to a rotating load, can be mounted with a slip fit on the shaft.

It is evident, therefore, that when the applied load is stationary with respect to the outer ring, a tight shaft fit is required. When the applied load is stationary with respect to the inner ring a tight housing fit is required.

Small bearings may be pressed on the shaft by means of a brass tube. Pressure is applied to the inner ring of the bearing by the tubing. The assembly of larger bearings can be simplified by a "heating" procedure. Heat the bearing in clean oil to a temperature of approximately 200° F. Care should be exercised *not to exceed this temperature*. Sufficient time should be allowed to assure that the bearing is heated throughout. This will sufficiently expand the bearing and permit it to slide easily over the shaft to its proper location. Care should be taken to prevent cocking of the inner ring as this may cause it to seize before the bearing is properly located. If this happens, it is best to promptly remove the bearing and reheat. When the bearing cools, it will shrink and grip the shaft. It requires only a little ingenuity to provide the tools to facilitate this procedure.

**Shaft and Housing Fits** A ball or roller bearing has extremely accurate component parts which fit together with very close clearances. The inner ring bore and the outer ring outside diameter must be manufactured within close limits to fit their respective members—the shaft and the housing. It follows, that the shaft and housing must also be machined to close limits. Only then, will we obtain the required fits when the bearing is mounted.

It is advisable to refer to the tables of shaft and housing fits as published in bearing catalogs. These tables list recommended dimensions and tolerances for various types of shaft and housing fits suitable for various operating conditions.

**Adapter Sleeve** The use of a tapered adapter sleeve on standard shafting will greatly simplify the mounting of the bearing. The outer surface of the sleeve is tapered to match the tapered bore of the bearing inner ring. This will provide the required tight fit between the inner ring and the shaft. The adapter sleeve is slotted to permit easy contraction and is threaded at the small end to fit a locknut. When the sleeve is drawn-up tight between the bearing and the shaft, a press fit is provided both at the shaft and the inner ring.

A lockwasher between the inner ring and the locknut prevents the nut from loosening. The use of micronized graphite will greatly facilitate assembly—and help prevent contact erosion of the parts. A light coating of graphite is applied on the shaft, adapter sleeve and the bore of the inner ring. It is good practice to apply a coat of oil to the shaft, housing and component parts before the bearing unit is assembled.

**Internal Bearing Fits** It is evident that a press fit between the parts will stretch the inner ring. This holds true when mounting the bearing directly on the shaft or by means of an adapter sleeve. Thus, there will be a tendency to reduce the initial internal radial clearance in the bearing.

If an excessive press fit is used, it is possible to reduce the bearing clearance sufficiently to make the bearing tight.

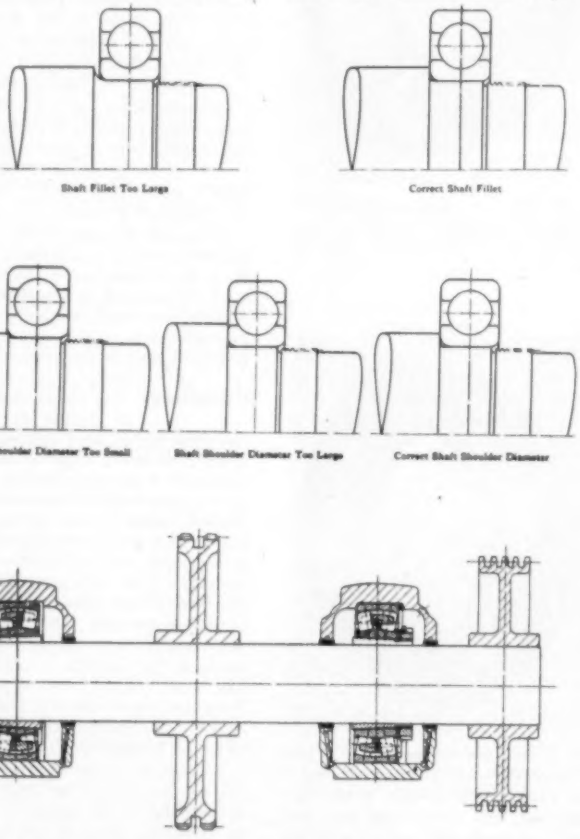
However, if the recommended shaft fits are used and normal operating temperatures prevail, the internal clearance remaining after mounting the bearing will be sufficient to insure proper operation.

When an adapter mounting is used some additional cautions should be heeded. If these are taken into consideration, the bearing will not be tight internally.

The following is the recommended practice for mounting *ball bearings* on adapters. Slowly rotate and swivel the outer race by hand while tightening the locknut. A light drag in the bearing will be apparent as the inner ring stretches and the clearance is reduced. This is the point where further tightening of the nut is not desired. The nut should then be drawn up so that a prong of the lockwasher is opposite a slot in the nut.

Before mounting *spherical roller bearings* on adapters, the internal clearance should be checked and recorded. Insert a feeler gauge between the top roller and the outer ring. The bearing should be resting upright on a table when making this check.

After mounting the bearing on the shaft and adapter sleeve, the locknut is tightened sufficiently to reduce the initial clearance by the


Shaft Fillet Too Large
Correct Shaft Fillet
Shaft Shoulder Diameter Too Small
Shaft Shoulder Diameter Too Large
Correct Shaft Shoulder Diameter
V-BELT AND SPROCKET DRIVE, RESULTING IN STATIONARY LOADS AND ROTATING INNER RINGS
Fig. 14. Examples of mounting.

required amount. This is checked in the same manner as above, by using the feeler gauge. The decrease in internal clearance after mounting is found in bearing literature as well as in pillow block mounting instructions.

**Temperature Conditions** Certain types of bearing applications require the consideration of variable temperature conditions.

*For Example:* An induced draft fan handling gases at high temperature. The fan wheel is mounted on the shaft. Therefore, that part of the shaft in the fan casing is subjected to the high temperatures. The bearings are usually mounted directly outside the fan casing. Thus, the temperature of the shaft at the bearing location is considerably higher than the room temperature. It follows, that the inner ring of the bearing (mounted on the shaft) will be considerably hotter than the outer ring. This is true, as the outer ring is mounted in the housing which is isolated from the fan and not subjected to the high temperature.

As a result, the inner ring will expand more than the outer ring. This action reduces the internal clearance in the bearing—in addition to the reduction due to the tight fit on the shaft.

To compensate for this additional reduction of internal clearance in the bearing, some provision must be made. Bearings with an internal clearance *greater* than standard should be used. This additional clearance will compensate for internal clearance reduction due to the temperature differential between the inner and outer rings. There are other cases where bearings with internal clearance greater than standard are required. Among these are dryer cylinder bearings in paper machinery where steam passes through the hollow shaft—shaker screens where tight shaft and housing fits are required—high speed applications where the temperature rise in the bearing, due to speed and load, is abnormal—etc.

It is preferred that such cases, and applications where extremely high temperatures are involved, be referred to the Engineering departments of bearing manufacturers.

If this additional internal clearance is not provided, the bearing will be excessively tight internally and cannot operate successfully. Excessive high operating temperatures and subsequent break-down of the lubricant due to carbonization will occur.

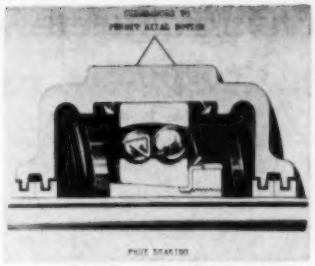


Fig. 15. A free bearing.

**Free and Held Bearings** A temperature variation will expand or contract the component parts of any machine. Due to this condition, it is essential that such parts be permitted to expand or contract without restriction. For that reason, *only one bearing* on any one shaft should be fixed axially in the housing (called a "held" bearing) to prevent axial or end motion.

All other bearings on that same shaft should have adequate axial clearance in the housing (referred to as "free" bearings). Such free bearings will permit the shaft to elongate and contract without restriction.

Generally, it is preferred to hold the bearing at the drive end. However, consideration should be given to the bearing load. In some cases, it is best to hold the bearing that carries the smaller radial load, especially where the "held" bearing is subjected to a thrust load of some magnitude. This will tend to equalize the distribution of the load on the bearings.

In gear reducers where herringbone gears are used, only one bearing on one of the shafts should be "held," usually the input shaft. It is evident that the "V" shape of the gear teeth will locate the other shaft axially.

When a flexible coupling is used to connect two shafts, a "held" bearing is required on each of the shafts —as a flexible coupling permits end motion of both shafts.

**Lubrication** The bearing unit can usually be lubricated with a good grade of sodium base grease for normal loads, speeds and operating conditions. The bearing housing should be filled approximately one-third full with grease.

An excessive quantity of grease will "build up" internal pressure in the bearing housing and result in high temperatures—and subsequent damage to the bearing.

Here is a safety measure to combat this danger when adding lubricant to the bearing. After the lubricant is added, remove the plug (preferably at the lower half of the housing) while the bearing is in operation. This permits the excessive lubricant to flow out of the housing and relieve the internal pressure. When the flow of grease ceases, be sure to replace the plug.

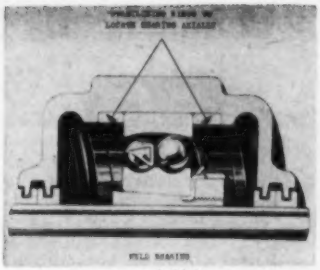


Fig. 16. A held bearing.

Speed and other operating conditions, in some cases, require that *oil* lubrication be used. In that event, the bearing housing should be equipped with adequate oil fittings. Such fittings should provide a static oil level at the center of the lowest ball or roller in the bearing.

Either pipe fittings, commercial oil cups or glass gauges can be used. However, it is preferred to use sight glass oil gauges which can be clearly marked for static and operating levels. The operating level is slightly lower than the static level due to agitation of the oil.

The static level can be marked on the gauge before the unit is assembled. The operating level can be determined only after the bearing is in operation. The gauge should also be marked for the operating level and the lubricant, *at no time*, should be permitted to drop below this point.

*(Part II will appear in an early issue.)*

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## General Portland Cement Co. Reports Rising Earnings, Sales

General Portland Cement Company, Chicago, Ill., had net earnings of $4,894,200 after taxes in the year ended December 31, 1952, as compared with earnings of $4,532,400 after taxes the year before, according to Smith W. Storey, president.

The 1952 earnings equaled $4.71 a share on 1,039,971 shares of common stock outstanding, as against $4.36 a share on the same number of shares for 1951.

Sales increased to $29,435,000 from $27,121,000 the year before. General Portland operates manufacturing plants at Tampa, Fla.; Chattanooga, Tenn.; and Fort Worth, Houston, and Dallas, Texas.

# Pennsylvania Stone Producers Told of Prices, Prospects

By JOHN P. FLYNN

ALTHOUGH they sold less tonnage to their biggest customer—the state—for highway maintenance and construction last year, the crushed stone quarries of Pennsylvania increased their over-all output from 4,900,000 tons to 5,200,000, members of the Pennsylvania Stone Producers Assn. were informed at their annual meeting in Harrisburg on January 28.

The highway department purchased 1,862,925 tons of stone, as compared with 2,289,668 in 1951, paying an average of $2.49 per ton, 38 cents higher than the previous year. Over 290,000 tons of gravel were purchased and 465,556 tons of slag. Average cost of gravel was $2.27 per ton and slag $2.60 per ton.

Highway department officials present at the meeting stated that greater tonnage would be required in the year ahead, and that if every highway district were allowed to do all the work it would like to do, the total aggregate consumption would run very close to ten million tons, but that financing and other problems will reduce the actual demand considerably.

President Paul I. Detwiler (New Enterprise Stone and Lime Company) was re-elected to head the group. Also renamed were Vice-President Robert B. Garman (Tyrone Lime and Stone Company); Treasurer H. M. Binkley (Binkley Bros., East Petersburg); and Secretary W. H. Fehr (Berks Products Corp., Reading). H. H. Wagner is general manager of the association.

W. E. Wilson (Hoffman Bros. & Wilson, Harrisburg), J. C. Showalter (Showalter Quarry, Blue Ball), John Teeter (John S. Teeter & Sons, Gettysburg), F. I. Narehood (Narehood Bros., Milton), Lewis M. Nauss (Carbon Limestone Co., Lowellville, Ohio), and Adam Eidemiller (Eidemiller Enterprises, Greensburg) were chosen directors for the year.

Over 250 members, guests and their friends, including several state officials and members of the State Highway Department and the Turnpike Commission, joined in the annual luncheon of the Pennsylvania Aggregates Producers during the session.

Lead-off man among the many speakers was the Hon. Charles C. Smith, Speaker of the House (Pennsylvania Legislature), who explained the difficulties faced by a legislator in trying to advance worthy public measures while striving to keep economies in his program. He urged that more businessmen get into politics.

Last year was the biggest year in the history of the state highway department, declared Charles H. Buckius, chief engineer of the Pennsylvania Department of Highways. He stated that the year ahead will find the state with its largest blacktop requirements in history. Mr. Buckius deplored the fact that federal gas tax monies do not all return to the state for use on the highways. Pennsylvania spent $197,000,000 in 1952, and only 8.4 percent of this was overhead, all the rest being dedicated to actual physical construction, reconstruction, and resurfacing, he reported.

The efforts of the producers to supply better aggregates and to increase their production to meet the needs of the department were promised by William A. Warrick, chief highway construction engineer.

The highway authorities hope to winter-stabilize every unstabilized road in the state by the end of 1953, N. A. Staples, chief maintenance engineer, reported. Grade 2A stone is being used in the stabilization of earth roads. He said that 1953 prices are slightly upwards, but praised the producers for their "good housekeeping" and wondered how they could "make money at those prices".

The purchase of fine and coarse aggregates during 1953 will be based on the newly-revised specification which is closer to the Simplified Practice Specification, according to William H. Herman, chief highway research engineer. He assured the producers that provisions would be made to take care of stockpiled materials produced in accordance with the old specification.

The new specification will eliminate avoidable waste, he assured the producers, reporting that one firm had been processing aggregate under 39 separate specifications! He praised the alertness of the producers for the low percentage of rejections, and informed them that the department is considering tightening the requirements on concrete materials.

The Delaware River extension of the Pennsylvania Turnpike will be completed by 1954, with all grading, drainage, and bridges finished this year, John D. Paul, assistant chief engineer of the Turnpike, stated in his address. Plans are progressing for the Gettysburg and Erie extensions to the Turnpike system.

Some innovations are planned in these Turnpike additions, George A. Rahn, chief materials engineer for the commission, stated. He added that specifications are still generally the same as heretofore, and outlined some of the innovations, including a special subgrade and a new technique for shoulder and medial strip construction.

Regards and regrets were received from E. L. Schmidt, secretary of the State Department of Highways, ill in Florida, who missed his first meeting in several years. Others introduced were David J. Walker, secretary of the Department of Labor and Industry; Allen Reynolds, secretary of the Department of Property and Supplies; Thomas J. Evans, chairman of the Turnpike Commission; and Blair T. Hefkin, director of highway purchases.

During the Stone Producers Association meeting, President Detwiler reported that the group had been extremely active in the year just past in promoting percentage depletion, and that good results were expected.

Three new active members have enrolled in the body: Valley Quarries, Chambersburg; Joyce Bros. Contracting Co., Wampum; and Valley Forge Stone Company, Malvern. New associate members include the following: the Aggregates Equipment Company of Lancaster; Kressler, Wolff & Miller of Easton; and the Independent Explosives Company of Cleveland, Ohio.

Copies of a new directory, prepared by the office of H. H. Wagner, general manager, were distributed. It lists the members of the Stone Producers Assn. and the Agricultural Limestone Division and shows also the associate membership, all officers of the State Department of Highways and the Turnpike Commission and regional offices, and the Production & Marketing Administration's county chairmen, and other personnel in Washington.

The formation of Pennsylvania's high-calcite stone deposits and the geological forces that have produced the variations and formations that we find today were discussed by Carlyle Gray of the State Department of Geology. He announced that maps available from the department showing the geological construction of the state have a great value in tracing and discovering mineral deposits.

# TAX LIENS may get you if you don't watch out!

By HAROLD J. ASHE
Tax Counselor

ONE of the little-noted consequences of the tax scandals in the Bureau of Internal Revenue is an apparently sharp stepping up in tax liens filed against delinquent taxpayers. At all costs, a taxpayer should avoid such a lien as he would the plague.

A check of one medium-sized Southwestern county indicated that in the last six months the Federal Government has placed liens against property to protect $170,000 in past-due taxes. While one or two of the liens involve large sums, the bulk of the liens probably average under $2,000 each, and some are for only a few hundred dollars. This is pointed out because a common misconception among taxpayers is the belief the government will not seriously press small tax claims.

Here is a typical case. The government slapped a lien against a quarry operator and his wife for 1949 income taxes in the amount of $254.62. In addition, the taxpayer had a lien placed against his business in the amount of $855.74 for 1950 and 1951 employees withholding and social security taxes.

Except in the case of famous or notorious name personalities, these liens are rarely publicized. Therefore, businessmen are too prone to assume that leniency—rather than liens—may be expected from the government. Actually, the filing of liens is a daily occurrence for the Collector of Internal Revenue in every district in the nation.

Liens give the government authority to seize property and to sell it to satisfy the taxes and interest allegedly due. Liens are filed with the county clerk in the county in which the taxpayer is located.

Liens serve to cloud the title and prevent the disposal of property by the owners. Such tax liens, as with other liens, will automatically show up in the preparation of abstracts of title.

Liens may be made to secure either the individual taxpayer's own income taxes, or withholding taxes and social security taxes deducted from employees, as well as the employer's matching social security taxes.

The claims empower the government, as a last resort, to take over both personal and real property, including a business, although there are certain minimum exemptions. Government seizure to satisfy claims is the final step, and a lien is a move in that direction. Usually seizure is resorted to only after the government is satisfied that evasion is involved or, at least, that the taxpayer is indifferent to paying the claims against him.

Failure to pay ones acknowledged taxes is viewed somewhat differently from attempts at tax evasion, according to the Bureau of Internal Revenue. However, there is a fine line of distinction which may not be visible to the layman. It is unwise to assume that the government will not consider a taxpayer an evader, even though his intentions are honest.

Tax evasion may lead to criminal action, which, of course, will result not only in the collection of the delinquent taxes and interest, but probably monetary penalties as well. Moreover, there is the possibility of a jail sentence.

In the event that a taxpayer has property which is already mortgaged up to the hilt, the government may be disposed to worry along with him. The policy is to try to collect the tax indebtedness, if possible, without legal action. However, this attitude is qualified by the disposition of the taxpayer to settle the debt or to refuse the obligation. Since the breaking of the tax scandals in the Bureau of Internal Revenue, responsible employees are showing a noticeable reluctance to be lenient, lest this be misconstrued as a "fix". As a result, more and more liens may be expected in the future, some of which may reflect unwarranted zeal on the part of Bureau employees.

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## New York Trap Rock

(*From page* 95.)

It is estimated that several weeks will be required to complete the move, and a total of eight months for the erection of the new crusher facilities to tie in with the flow of material from present Haverstraw operations.

Operations at Haverstraw are being expanded by developing a third quarry level at the present location and by preparing for the opening of a new quarry north of the Short Clove Road in the town of Haverstraw. The stone will be reduced in size at the new quarry level and will be conveyed by belt to secondary crushers. The finished product will be carried under 9W and over the West Shore Railroad tracks to dock facilities on the Hudson River.

The new facilities are being erected at Haverstraw in anticipation of a continuation and a possible increase in consumption of crushed stone for major highway construction, street and road repair work, and in concrete construction for home and commercial building, air fields and bridge construction. Much of the plant's facilities will be used to supply such work as the New York State Thruway, the Tappan Zee bridge crossing, and other vital links in the state's highway program. These projects, of course, tie in with overall defense requirements.

By planning to expand quarrying operations at Haverstraw, New York Trap Rock has encountered a serious conservation problem. Since the start of operations at Haverstraw in 1927 the firm has followed a definite quarrying plan to preserve the scenic beauty of the Hudson. Trap Rock has always refrained from quarrying the river face of the Palisades, although there is a tremendous quantity of valuable material involved. Due to the zoning restriction against quarrying in the part of Clarkstown lying north and west of the present quarrying operations (see aerial view), Trap Rock's long-established conservation policy is endangered. The needs of the construction and road-building programs for crushed stone will require either removal of the restriction on the zoned land or the possible necessity of quarrying still farther east and working the face of the Palisades both north and south of the Short Clove Road.

According to Mr. Foss, New York Trap Rock has no desire to alter its conservation policy or to deface the scenic beauty of the Hudson. Consequently, the firm is appealing to the local courts to change the zoning restriction and to return to industrial uses the lands which were owned by the corporation long before the zoning took place.

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Net sales of the Dragon Cement Co., Inc., New York, for the 12 months ended September 30, 1952, were reported to be $841,738; for the comparable period in 1951 the figure was $913,358. Net sales, 1952, were $8,709,112, as compared with $9,755,086 in 1951. Earnings per share in 1952 were $4.95 (170,123 shares outstanding); in 1951 the figure was $4.06 (225,000 shares).

# Job Training For Safety

I HOPE you will forgive me for taking just a moment to define the word safety. Safety is defined in Webster's Dictionary as "a condition of being; freedom from danger or hazards". Safety is therefore a static condition where accidents and hazards are eliminated. It is the ideal state that we are interested in

**By JAMES F. COLLINS***
**Industrial Relations Department**
**Universal Atlas Cement Company**

achieving. If you will note, the definition does not reveal how this condition of being safe, or how this freedom from danger or hazards can be obtained.

Safety cannot be attained solely by a safety slogan, by a poster campaign, by plant safety bulletins, or by personal protective equipment, such as hard hats or safety shoes. To some people these things are the essence of safety. Yet, when we examine them more closely, we must realize that they are merely the trappings of a safety program. They may be present or absent in a plant or company with a good safety record.

Safety *can* be achieved:

1. By properly safeguarding machinery, equipment, materials, and working conditions.
2. By training the individual to work in the plant.

The proper safeguarding of machinery, equipment, materials and working conditions is obtained by utilizing the skills and alertness of the engineering staff and the supervisory personnel. The objective is to engineer the hazards out of each job so that these can be avoided or eliminated. How well this endeavor is organized must have a salutary effect on the morale of the worker, because it illustrates the company's interest in his welfare.

The second requisite for safety is education. Statistics indicate that not over 15 percent of accidents are mechanically preventable; that more than 85 percent of the accidents result from lack of knowledge or care on the part of the individual employee. This would indicate that there is a vast area for the elimination of accidents that may be accomplished by education or training.

More and more is said today concerning the importance of training. Training is not a new concept. It has existed since the beginning of time, when men learned by trial and error, and passed on the secrets of their skills to their families or tribes. During World War II the various job training programs sponsored by

James F. Collins, Industrial Relations Department, Universal Atlas Cement Company.

the government enabled growing defense industries to find the skilled manpower to meet their war time production requirements. As a result of World War II experiences, formalized or controlled training has been accepted as a tool to be used in developing skill and efficiency, promoting accident prevention, and motivating employee satisfaction.

### Objectives of Training

Job training for safety is a positive and dynamic approach to a major industrial problem. If the purpose of industry is to improve the wellbeing of the nation, to help raise the standard of living by providing goods, and to enhance the dignity of the individual worker, it goes without saying that this objective cannot be achieved if, in the process, industry kills or maims its workers. A few decades ago the members of the "muckraking school" smeared industry by stating that it was indifferent to the welfare of the individual worker. This old charge has been taken up by Russia to besmirch American industry before the whole world. I hope that each and every one of us in this audience can truthfully state that we believe this to be a falsehood. Industry on the whole is interested in the welfare of its workers. It is fundamentally wrong for management to evade, even in part, the obligations and duties it must assume for the safety of employees. As management is responsible for production and for sales, it must also maintain its responsibility for the work direction of employees.

There has been some talk concerning governmental intrusion into safety. Some people believe that by passing a law safety can be legislated. Safety laws, unfortunately, do not make for safety. As one prominent writer has stated, "If government action can assure safety, then government workers should have the best safety record in the land, and you know this is not the case." The largest employer in the country is the Federal Government, with over 2½ million employees. Many of these are office workers, certainly not a hazardous occupation. Yet, the frequency rate and severity rate for federal employees is considerably higher than it is in many occupations with far greater hazards. Furthermore, according to the latest statistics available, these rates are not being brought down. In a search for further improvements in safety, therefore, there is little evidence that we will find our answer in more legislation or more governmental action.

### Employee Relations

Throughout the country there is a growing concern over the attitude of the individual worker toward his job and toward his company. Recent studies indicate that the worker's interest in his job has deteriorated; that individual productivity has actually decreased. A safety program cannot succeed without a careful consideration of the role played by the individual worker. It is the individual employee who works safely or gets hurt. He must be an integral part of the program; he must know what it is; and he must want to participate. The essential element that should promote his participation and earn his co-operation in a successful safety program is job instruction or job training.

Job instruction, when it is planned, tells the worker what he is to do within the plant or the work group; it shows him how to perform his job with the minimum of effort without endangering himself or his fellow workers; and it established his relationship to other workers in the plant.

A prominent writer recently stated in *Fortune Magazine* that the new employee "not only has a right to

*Presented at the Cement & Quarry Program of the 40th National Safety Congress.

expect training . . . he has an obligation to get as much training as possible". Employees are becoming more training conscious, and often have definite opinions concerning the relative worth of companies on the kind and type of training given by different companies.

Psychologists have stated that any program or activity which requires employee participation or co-operation must of necessity offer two things: (1) the feeling of belonging; and (2) recognition.

Each one of us has experienced at some time the importance of this feeling of belonging. It is a primary motivating factor in our desire to belong to a social or a fraternal group. This feeling of belonging can be an influential factor in job training for safety. All employees in the plant must be made to feel that they belong, and are a part of the activities of thta plant. If they cannot develop the feeling that they belong, they will not carry their responsibilities of that plant. If they cannot they apply either to themselves or to others. Once individuals or groups of individuals break off from the periphery of a safety program, there can be reasonable doubt as to the effectiveness of that program.

In the same way, recognition is also required in other efforts demanding employee co-operation. The most effective way of giving recognition is through individual instruction and coaching on a job. If there were more of this kind of training, consciously adopted and followed, there would probably be a falling off in those accidents that are directly attributed to accident-prone individuals. In most cases, accident-prone individuals are emotionally unstable. The recognition which they crave may be satisfied by an effective job-training program.

### Training Problems

Job training requires a realization of the importance of the task on the part of those to whom is assigned the responsibility for actual training. Job training is specifically a tool utilized by supervisory personnel and their subordinates for the purpose of instructing employees. There must be preparation on the part of management to provide the skills required for such training. There is no doubt that the preliminary efforts required for any effective job training program taks time and preparation. Substantial improvements in accident frequency cannot be achieved in any other way than by

**UNIVERSAL ATLAS CEMENT COMPANY**

Duluth Plant

Job: Clinker Burner Date: 6/15/50

Operation: Clinker Burning Dept: Operating

Tools Required: Chunk hooks, bars, shovel, burning glasses, broom, clinker sample ladle, screen face shield.

Materials Required: Raw materials and coal.

| Steps in Job Performance | Key Points |
|---|---|
| 1. Inspect kilns | Wear burning glasses. |
| a. Quality of clinker made on previous turn. | |
| b. Check for hot spots. | |
| c. Check for rings. | |
| d. Check individual draft meter charts. | Draft is set by kiln tester. |
| 2. Check position of rheostat on coal feed | Do not cut coal feed unless control lever on kiln is on full speed. |
| a. Check smoke coming from stacks. | |
| 3. Check control lever on kiln. | Make certain kiln is operating at proper speed. |
| 4. Read temperature of kilns | Uses pyrometer; should be around 2600 degrees. |
| a. Taken twice on each turn. | |
| b. Fills out report. | |
| c. Low temperature-slows speed of kiln which is regulated by control lever. | |
| d. High temperature-place kiln on full speed and if necessary cut coal feed. | |
| 5. Inspects clinker elevators to determine if they are operating. | Handles move up and down continually on outside of elevator casing. |
| 6. When ring formation is bad kiln is stopped | Front rings are cut with ring cutting bar. Kiln gun is used to shoot out back rings and also to break up balls which form in kilns. |
| a. Shut off control lever. | |
| b. Cut off coal feed. | |
| c. Put slide in coal feel pipe. | |
| 7. Notify ring cutter leader to cut ring. | |
| 8. When ring is cut: | |
| Take slide out of coal feed pipe. | Make certain men are in the clear. |
| 9. Start coal feed. | Watch for backfire |
| a. Make certain kiln has the proper temperature before starting. | |
| 10. Start the kiln. | |
| a. Feed screw is driven by kiln drive and feed is increased or decreased by speed of kiln. | |
| 11. Cleans dust from braces and test pipes. | Uses hoe. Uses goggles and gloves. Watch for hot material. |
| a. Opens kiln housing door, rear. | |
| 12. Pull lumps off discharge grate. | Use 7-foot hook. These lumps accumulate after a ring has been cut and are too large to pass through discharge grates. Lumps are broken by ring cutters and shoveled into chute. |
| 13. Keep floor area clean. | Use air hose (caution on use). Wear goggles. Watch for coal dust |
| a. Any coal dust spill should be wet down and shoveled into buggy. | |
| 14. Keep correct report on running time of kilns. | |

NOTE:- This is not a complete description of the job and is not a description of any man's work. Changes may be made in this procedure at any time. This procedure does not necessarily limit the number of men used on this job; men may be added or taken away as conditions warrant.

A sample job procedure outline used by the Industrial Relations Department of the Universal Atlas Cement Company.

a conscientious recognition of the individual worker, and the training of that worker by his immediate supervisor or foreman. The preliminaries of training require time and skill, without which progress cannot be made in job performance.

In the Universal Atlas Cement Company we have recognized this problem and for several years have been slowly laying the ground work for a job-training program. In the beginning, job procedures were written only where lost-time or near lost-time accidents had occurred. The writing of such job procedures or job breakdowns was specifically designed to re-examine the job, and to see specifically whether or not there was anything in the job itself that would lead to an unsafe condition. On the basis of such job breakdowns, many valuable suggestions were brought out.

At the present time we are undertaking a formidable project in writing job procedures on the more important jobs or operations in the plants. This will take a considerable amount of time. The question we have asked ourselves is whether or not the time taken will achieve worthwhile results. Such a job procedure can be used for the following purposes: (1) to see that all steps in a training procedure are covered; (2) to measure the efficiency of the work force; (3) to improve job methods by closer attention to the details of the job; (4) to aid employees in doing a job safely and without undue stress; (5) to check the job performance of the individual worker; (6) to seek suggestions for job improvements from employees; (7) to capitalize on supervisory "know-how"; (8) to aid the foreman in organizing his job and making it easier.

The job breakdown includes all the more important steps in the performance of a job. It not only includes the operational steps in sequence, but also includes key points that should help the employee perform his job more smoothly, thereby increasing his self-confidence. The job breakdown is, therefore, the basic guide for insturction by the supervisor, and it should be referred to constantly, particularly in the initial job instruction and on all follow-ups of that instruction. The job procedure is flexible enough to permit the foremen to introduce new ideas.

## Training Methods

After the job procedure has been prepared and verified, a job training chart is completed. This job training sheet is used to analyze the performance of a work force and see that the members of a work crew performing similar work are performing their tasks properly; and to serve as a check list when training an individual employee in a task.

UNIVERSAL ATLAS CEMENT COMPANY PAGE____

_____ PLANT

Exhibit II

**JOB TRAINING SHEET**

JOB: Clinker Burner DEPT: Operating

DATE: 6/18/50

PURPOSE:

☐ JOB TRAINING CHECK LIST

☒ ANALYSIS OF WORK FORCE PERFORMANCE

| JOB STEPS | G. L. WILSON | G. V. MOYEE | F. A. BOSCO | B. L. WALKER | J. P. HAMMOND | |
|---|---|---|---|---|---|---|
| 1. Inspection of Kilns | I | I | I | T | T | |
| 2. Reading Charts | | | | | | |
| (a) Draft Meter Chart | I | X | X | T | T | |
| (b) Rheostat on Coal Feed | X | X | X | T | T | |
| (c) Control lever on Kiln | X | X | X | T | T | -X |
| (d) Temperature gauges | X | X | X | T | T | |
| (e) Pyrometer | X | X | X | T | T | |
| 3. Inspection of Clinker Elevator | I | I | I | T | T | |
| 4. Ring Formation | T | T | I | T | T | |
| 5. Preparation To Cut Ring | T | T | I | T | T | |
| 6. Starting Up of Kiln | X | X | X | I | T | -X |
| 7. Method of Dusting Braces and Test Pipes | I | T | T | T | T | |
| 8. Pulling Lumps Off Discharge Grate | I | I | I | T | T | |
| 9. Keeping Area Clean | I | T | I | T | T | |
| 10. Making Correct Report on Running Time of Kilns | I | X | X | T | T | -X |

KEY:
I-NEED IMPROVEMENT TRAINING
T-FULLY TRAINED
X-NEEDS COMPLETE TRAINING
T(1)-FIRST TRAINING SESSION COMPLETED
T(2)-FOLLOW-UP TRAINING COMPLETED

Job training sheet in use at plants of the Universal Atlas Cement Company. This one shows an analysis of work force performance.

The job training sheet highlights the training areas in which a foreman should concentrate his training efforts. It will be noted that the sample training sheets indicate that training is required in three areas: reading charts and instruments, starting up a kiln, and reporting on kiln operating time. This training deficiency can be remedied by the foreman concentrating his attention on the men involved. His training task can be lightened by bringing together all the men who have the same deficiency. When these men have been brought up to standard performance, he can concentrate on the isolated instances where improvement training is required.

The same procedure may be followed in improvement training by bringing the men together in a group, or by individual instruction given by the foreman, or by a skilled worker whom he has *trained* for the task of instructing others.

As our program develops, we hope to supplement it by a new method of accident analysis which will further pin-point areas of concentration for intensive job instruction. This method of analysis should provide an opportunity to survey accidents in the plant by indicating the various trouble spots. These trouble spots may be revealed either in a job, a specific act, or a specific condition. Where it is indicated that we have a trend of a similar kind of accident, or where accidents of various types are found in a certain job, the training effort should be concentrated on that job or operation.

Have we ever figured the wages

UNIVERSAL ATLAS CEMENT COMPANY PAGE____

_____ PLANT

Exhibit III

**JOB TRAINING SHEET**

JOB: _____ DEPT: Operating

DATE: 6/25/50

PURPOSE:

[XX] JOB TRAINING CHECK LIST

[ ] ANALYSIS OF WORK FORCE PERFORMANCE

| JOB STEPS | G.L. WILSON | G. V. MOYER | F.A. BOSCO | B.L. WALKER | J.P. WAMMACK |
|---|---|---|---|---|---|
| 1. Inspection of Kilns | $T_Y$ | $T_Y$ | $T_Y$ | ✓ | ✓ |
| 2. Reading Charts | | | | | |
| (a) Draft Meter Chart | $T_Y$ | $T_{1-Y}$ | $T_{1-Y}$ | ✓ | ✓ |
| (b) Rheostat on Coal Feed | " | " | " | ✓ | ✓ |
| (c) Control lever on Kiln | " | " | " | ✓ | ✓ |
| (d) Temperature gauges | " | " | " | | |
| (e) Pyrometer | " | " | " | | |
| | | | | | |
| 3. Inspection of Clinker Elevator | $T_Y$ | $T_Y$ | $T_Y$ | ✓ | ✓ |
| 4. Ring Formation | ✓ | ✓ | (I) | ✓ | ✓ |
| 5. Preparation To Cut Ring | ✓ | ✓ | (I) | ✓ | ✓ |
| 6. Starting Up of Kiln | ($T_1$) | $T_{1-Y}$ | (X) | $T_Y$ | ✓ |
| 7. Method of Dusting Braces and Test Pipes | $T_{1-Y}$ | ✓ | ✓ | ✓ | ✓ |
| 8. Pulling Lumps Off Discharge Grate | $T_{1-Y}$ | $T_Y$ | (I) | ✓ | ✓ |
| 9. Keeping Area Clean | $T_{1-Y}$ | ✓ | (I) | ✓ | ✓ |
| 10. Making Correct Report on Running Time of Kilns | $T_Y$ | $T_{1-Y}$ | (X) | ✓ | ✓ |

KEY:
I-NEED IMPROVEMENT TRAINING
Y-FULLY TRAINED
X-NEEDS COMPLETE TRAINING
T(1)-FIRST TRAINING SESSION COMPLETED
T(2)-FOLLOW-UP TRAINING COMPLETED

This sheet, in use at the same plant, is a job-training check list.

paid to an average employee for a 10- or a 20-year period, and compared it to the cost of some piece of equipment in the plant? After a little mental arithmetic of this sort, doesn't it seem a great waste not to take at least the same time in training employees that we take in planning for new equipment, or changes in procedures?

## Labor Developments

(*From page* 112.)

Workers Union finally agrees to the use of the new index with some guarantee against too great a loss if the cost of living should fall substantially.

The whole story is an illustration of what can happen when a statistical measurement designed for one purpose—to measure changes in the general cost of living—is used for quite another purpose—to determine the level of wages.

Other employers who agreed to cost-of-living clauses have become the incidental victims of the controversy. If their agreement used the old index, they do not have to make an immediate conversion, but because its issuance will be delayed they may have to make special arrangements with their unions to postpone the effective date of any increase which may be due and, perhaps, to arrange for retroactive payments. Later, they will probably still be required to convert to using the new index. This, too, will involve the solution of some fairly complex and technical problems.

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Sale of the Material Service Corporation's quarries at Burlington, Wis., to Dan Noonan, A. C. Halquist, and Caesar Marconi was announced recently. Mr. Noonan has been manager of the quarries for the last six years.

## Expanded Shale Institute

(From page 115.)

Numbering about 25, the tour party also visited the new 3-kiln expanded shale plant of Texas Industries, Inc. This modern plant, located on the west side of Dallas, will probably be placed in operation early in 1953.

The following companies were represented at the meeting: Hydraulic-Press Brick Co., St. Louis, Mo., and South Park, Ohio; Texas Industries, Inc., Dallas; Poston Brick and Concrete Products Co., Springfield, Ill.; The Cooksville Company, Ltd., Toronto, Canada; The Featherlite Corp., Dallas; MacNear Brick Co., San Francisco; Carter-Waters Corporation, Kansas City; John H. Black Co., Buffalo; Buildex, Inc., Ottawa, Kans.; Kentucky Light Aggregates, Inc., Louisville; Smithwick Concrete Products, Portland, Oreg.; and Light Aggregates, Inc., Rapid City, S. D. At the conclusion of the Dallas affair it was announced that the next annual meeting of the Institute will be held in Kansas City.

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## Decline Noted in Production Of Mineral Pigments in 1951

Demand for mineral-earth pigments declined slightly in 1951, and sales of most products were lower than in the previous year, according to reports made by producers to the U. S. Bureau of Mines. Total sales of mineral-earth pigments totaled 126,432 short tons, valued at $14,987,075, approximately 2.2 percent less than that reported in 1950.

Natural mineral-earth pigments accounted for 64.6 percent of the total tonnage produced in 1951. Red oxides accounted for 49.7 percent of the natural pigments or 32.1 percent of the total mineral-earth pigments. Yellow oxides represented 10.2 percent and 6.6 percent, respectively.

Sales of synthetic earth pigments totaled 44,769 short tons or 35.4 percent of the total sales of mineral-earth pigments. Pure red oxides (98 percent or better $Fe_2O_3$) represented 48.2 percent of the synthetic sales, and pure yellow oxides (85 percent or better $Fe_2O_3$) represented 30.8 percent.

## Volume Two on Soluble Silicates Released by Publisher

The balance of a technical publication has been issued. It is Volume 2 of *Soluble Silicates* by James G. Vail. This volume (Technology) deals with the uses and applications of soluble silicates in industry.

Among the subjects covered are detergent uses; coatings and films; bonded surfaces; sols, gels and polymers; and physiological behavior. This is also designated as A.C.S. Monograph No. 116.

Published by the Reinhold Publishing Company, 330 W. 42nd Street, New York 36, N. Y.; 669 pages. Price, $15 per copy.

(*From page* 109.)

the president, he may be the engineer, or he may be the office clerk, but there must be someone definitely associated with safety. He has to act, talk, think, and live safety. Here and now let me put in a word for the foreman. The poor foreman in a good many instances is given the full responsibility for the safety program, and regardless of whether an accident is the result of an unsafe act or an unsafe condition, he is held to blame. Even in the elusive one percent classification of accidents, the so-called "Act of God" accident, the foreman is still held to blame. You don't ask the foreman to do a job unless you give him some tools to work with. We certainly need the foreman's help, but let us give him some safety tools to work with. Just don't turn the job over to him and expect him to struggle with it alone.

"The first step in starting any safety program," Mr. Jones said, "is to get management interested in safety. If the president is a safety-minded man, the problem becomes quite simple. That is the way our program started many years ago. Management's interest in safety started the program."

The speaker listed the following specific steps to be taken in developing an effective safety program:

a. Organize a safety committee to formulate rules and safe practices, analyze accident reports, and classify accidents.
b. Purchase such equipment as safety glasses, face shields, hard hats, respirators, gloves, and safety shoes where needed.
c. Provide safety posters and payroll inserts.
d. Hold safety rallies at least once a year.
e. Safeguard equipment and provide safe walkways and passageways.
f. Establish and maintain good housekeeping throughout the plant. This builds good morale.
g. Join the Cement & Quarry Section of the National Safety Council.
h. Create safety consciousness in every employee.

"The matter of creating and maintaining a safety consciousness in every individual worker," Mr. Jones said, "is of the utmost importance. Some of the items previously mentioned, such as posters, payroll inserts, safety equipment, good housekeeping, and so on, will help in this respect; but the one thing that has done more than anything else to promote this, as far as we are concerned, is our safety dividend, or safety bonus plan.

"Briefly, what we do is give every employee working on any one of our payrolls one percent of his earnings made during a period in which that payroll group has accumulated 30,000 consecutive man-hours without a single lost time injury. Our definition of a lost-time injury is the same as that used in the National Safety Competition. That dividend is what we call the plant bonus, and everyone on the payroll gets it. It is the bonus earned by the teamwork of the plant group itself. In addition, we recognize individual effort by increasing the bonus to 1½ percent when the individual employee has been with us three years, and he himself has not had a lost-time injury in that period. If the employee has been with us six years, he receives two percent . . . if he has been free from lost-time injury throughout the entire period.

"For a plant of only 3 or 4 men", the speaker continued, "it takes two years or more to build up 30,000 man-hours. On the other hand, a plant having 45 men requires only about three months. However, I am sure you all realize where there are operations of various numbers of men, a straight time period would not be fair or just to either party. There is a definite accident exposure for every man on the job. Furthermore, a man working at Plant B, employing 45 men can earn just as much of a bonus as the man at Plant A gets after the two-year period, provided, of course, he is getting the same rate of pay. The only difference is that he would get, say, eight $25 safety bonuses, while the man at the small Plant A gets one $200 bonus.

"Now as to the economics of the plan: some people may argue that you shouldn't have to pay for safety. But you pay for production—and safety is part of production. What we do in effect is create an incentive production plan. Given two separate examples: one company pays the manual compensation rate but has several lost-time injuries, including a couple of amputations and a fatality. The other company pays out for compensation insurance on the retrospective rating plan the minimum rate plus several safety bonuses, which all totals what the first company paid out, but they had no lost-time injuries. I don't think there is anyone here today that wouldn't settle for the latter. No lost-time injuries, no fatalities, no amputations. Also, the first company cited is not going to get its insurance at the manual rate next year.

"We have had the plan in effect some 15 years now, and there has never been a year when the total of what we paid out for compensation insurance and for safety bonuses would compare with the manual rate premium that we might have had to pay. We were self-insurers during part of this period. The total of everything paid out—doctors' bills, hospital bills, compensation payments, catastrophe insurance premiums, safety man's salary, expenses for all supplies, and the safety bonuses—never came anywhere near the manual rate premium. What we do, in effect, is share with the employees the savings effected by a good safe non-accident period of operation."

In concluding his remarks, Mr. Jones made it clear that his company's program is in no sense a cure-all. "We know," he said, "that it helps a great deal, and we still do all of the other things previously mentioned. We know that still more must be done to reach the ultimate goal of no lost-time accidents. In the final analysis, it doesn't really matter what plan is adopted as long as some plan is undertaken, that something is done, and that we don't put it all on the foreman to do. If we all become safety-minded men, we will have the problem pretty well licked."

Following are some of the questions, along with Mr. Jones' answers, which were asked in regard to the safety program operated by his company:

Q: Is there a tendency for the men to become careless after losing the bonus?

A: No, the plan has had a long-term good effect upon accident experience.

Q: Is first-aid training helpful in the operation of a safety program?

A: Yes, it is most helpful, and our company fully believes in such training.

Q: Is there any tendency for the men to conceal injuries under the bonus system?

A: So far as is known the company has had no trouble in this respect, and it is believed that the bonus system may actually tend to encourage prompt reporting of all accidents.

Q: Do unions object to safety equipment?

A: No, this appears to be one question upon which unions and management are in almost complete agreement.

**Delay Blasting** In his paper entitled *Recent Practical Developments in the Field of Short-Period Delay Quarry Blasting*, L. Don Leet, associate professor of seismology, Harvard University, pointed out that the seismograph has played an increasingly important role in assessing the effectiveness of short-period delay quarry blasting.

He listed the following recent practical developments in the field as being directly traceable to this fact: (1) new data on what Jenkins has called the "vibration dip" characteristic, a term referring to the fact that as amounts of explosive are increased progressively, a point of minimum vibration and maximum rock-breaking efficiency is reached that is unique for each operation; (2) the establishment by Crandell of a specific relationship between powder factor and energy ratio; and (3) the promulgation by the state of New Jersey of quarry blasting regulations that specify in detail the allowable amplitudes of ground motion at each frequency in the ground.

In describing the "vibration dip" phenomenon, Dr. Leet said that soon after the first seismographic measurements around quarry blasts were made, it became apparent that reduction of the amount of explosive did not automatically reduce the amount of vibration in direct proportion. "With the advent of short-period blasting," the speaker continued, "this general rule became even more significant. Recently Jenkins reported some case histories illustrating this principle graphically. For a small operation, he found that at 250 ft. from a 50-lb. shot the maximum amplitude of vibration was .002 in.; as the amount of explosive was increased, the vibration increased until it was a maximum of .003 in. for just over 100 lb.; then as the amount of explosive was increased further, the vibration decreased until a 160-lb. shot produced only .002 in., as had a 50-lb. shot; after that, increasing the amount of explosive again increased the amount of vibration. For this operation, the 'vibration dip' was at 160 lb. At the same time, since vibrations are waste by-products of the explosive energy, a 160-lb. shot at this quarry was significantly more efficient from an operating standpoint than any other.

"This illustrates the principle of the 'vibration dip'. Jenkins found it also for operations in the 1,000- to 4,000-lb. range, and in the 15,000- to 40,000-lb. range. It depends on local factors, and although it probably exists for every quarry, the exact point at which the dip occurs and the magnitude of the dip are unique for each operation, and can only be determined experimentally.

"Other investigators have observed this phenomenon," Dr. Leet went on, "and it now seems to be well established as a general principle. The effects can be quite spectacular in large operations. For example, in one case a 3-hole delay shot of 12,000 lb. produced maximum vibration displacements of .011 in., but at the same recording location a delay shot in the same quarry consisting of 12 holes and 37,772 lb. produced maximum vibration displacement of only .008 in. It is clear that the 12-hole shot was much more efficient than the 3-hole."

In discussing Crandell's development of a specific relationship between powder factor and energy ratio, Dr. Leet pointed out that powder factor has long been suspected as one of the variables that combine to determine the vibrations around quarry blasting, as well as the amount of stone broken. "By a combination of experiment and theory," the speaker said, "Crandell has recently formulated a precise statement for the relationship between powder factor and energy ratio. He has kindly made this material available to me for reporting in outline here before it has been published.

"In earlier works Crandell defined a term called energy ratio as the square of the acceleration divided by the square of the frequency. He found experimentally that structures are safe if the energy ratio is less than 3, that between 3 and 6 old buildings pre-stressed by settlement and shrinkage or expansion of frame members owing to moisture content may be damaged; and that above 6 damage will occur to residential types of buildings or brickwall-bearing structures. He further established that the energy ratio is equal to $C^2K$, where C is the number of pounds of explosive and K is a ground constant for each quarry.

"Crandell's new work on this subject," Dr. Leet continued, "involves a detailed theoretical investigation of the factors determining the value of the constant K. He finds that it depends directly upon the powder factor, as well as on the ratio of pounds of explosive to weight of earth moved by vibrations. The last factor can be converted into distance to which vibrations extend. It is not a refined calculation of accuracy of five decimals, but some experimental comparisons of theory with observation show significant order of magnitude agreement. The essential importance of all this in practical field terms is that it spells out in numbers and seismographic observations the fact that as the powder factor is decreased, the energy ratio for a given amount of explosive is decreased proportionately. Or, the reverse: if the powder factor is increased, the energy ratio is increased (*i.e.* the vibrations are greater).

"One specific operating factor that needs to be reviewed carefully by each quarry in the light of these results is the combination of spacing and burden which is used. Reports of changes from 8 by 8 to 12 by 8 on a given face being made possible by delay blasting indicate that some experimentation controlled by seismographic checks on vibrations as well as by analysis of the breakage may at many quarries lead to appreciable reductions in the powder factor, and hence also to the energy ratio and vibrations disturbing to the neighborhood.

"At every turn it is being proven that the most efficient blasting operation in terms of amount of stone broken and the quality of breakage for given quantities of explosive is the one that creates minimum vibrations. As a result, seismographic analysis of the vibrations is a powerful tool for measuring the efficiency of a quarry blasting operation as a simple engineering project.

"The state of New Jersey," Dr. Leet said, "recently acknowledged technological progress in the field of determining safe limits for vibrations by incorporating such limits in a set of *Rules and Regulations Governing Quarry Blasting and Related Operations*, issued August 8, 1952. In the Bureau of Engineering and Safety, C. George Krueger, deputy director of the Division of Labor, made an exhaustive study of this subject for over a year, using a board of consultants with representatives of the industry, explosives manufacturers, and science. In addition, he explored special phases of the problem with the Bureau of Mines and Aberdeen Proving Grounds.

"Having determined the engineering facts, Krueger placed the state firmly on record as supporting the rights of conforming quarry operators by the following statement introducing Section 6—*Seismic Effects and Air Blast:* 'Allowable limits of ground motion and sound pressure contained in this section shall be considered neither to produce structural damage in any structure that has been reasonably well constructed according to accepted engineering practice nor to constitute a nuisance to persons.'

(*Continued on page* 140.)

# 34th A.E.D. Meeting Breaks Attendance Program Records

**By E. E. GREEN**

The Associated Equipment Distributors' 34th Annual Meeting broke all records in both volume of registrations and number of projects handled. The meeting, at the Conrad Hilton Hotel, Chicago, February 1-5, drew 2,800 American and Canadian construction equipment distributors and manufacturers. The business program of the convention centered around four business sessions, a special clinic for local association officers and the traditional "Meet Your Manufacturer" session. Added to these sessions were 19 smaller conferences.

"Meet Your Manufacturer" session, giving distributors and manufacturers an opportunity to meet and arrange for individual conferences later in the week, opened the program on Sunday, February 1.

Out-going president H. J. Hush, Griffin Equipment Company, New York, opened the Monday session with a brief report on the status of the association, and then called on chairmen of various committees for separate reports.

The 1953 officers elected on Wednesday include: S. John Oechsle, president, Metalweld, Inc., Philadelphia, Pa.; Frank Skidmore, executive vice-president, Contractors' Equipment & Supply Co., Albuquerque, New Mex.; George W. Gagel, vice-president, Machinery & Supplies Company, Kansas City, Mo.; R. J. Finn, vice-president, Bode-Finn Co., Cincinnati, Ohio; J. W. Halls, vice-president, Consolidated Engines & Machinery Co., Ltd., Montreal, Quebec; F. J. Fitzpatrick, treasurer, Parker-Danner Co., Hyde Park, Mass.

Directors from even numbered regions elected by a mail ballot are: M. E. Rupp, Region II, Rupp Equipment Company, Buffalo, New York; L. C. Basham, Region IV, West Virginia Tractor and Equipment Co., Charleston, W. Va.; R. J. Finn, Region VI, Bode-Finn Company, Cincinnati, Ohio; S. F. Laskey, Region VIII, Northwestern Equipment, Inc., Fargo, N. Dak.; J. A. Benson, Region X, Benson Tractor Company, Houston, Tex.; G. H. Jamison, Region XII, A. H. Cox & Co., Seattle, Wash.; R. E. Corson, Region XIV, Ray Corson Machinery Co., Denver, Colo.

In addition J. W. Halls, president of the Canadian A.E.D., Consolidated Engines & Machinery Co., Ltd., Montreal, Canada, was named director for a one-year term.

The largest attendance, close to 900 dealers, was drawn by a distributor management report given by Charles Reitell, a partner in the management consultant firm of Stevenson, Jordan & Harrison, New York. He reported the results of preliminary study based on personal surveys of 17 distributors and a mail survey of the entire A.E.D. membership. Norris Perris, senior partner in the firm, assisted with the report.

S. John Oechsle, Metalweld, Inc., Philadelphia, Pa., new A.E.D. president.

Election of officers opened the Wednesday session. Following this, Frank Skidmore, newly elected executive vice-president, introduced three guest speakers.

Frank Nikirk, University of Berkeley, Calif., spoke on *"Science and Construction"*. He traced the development of construction from the beginning of civilization, and showed how the introduction of the scientist has created conflicts which are yet to be completely resolved. He told how his course was attempting to coordinate practical knowledge of the practical man with the theoretical knowledge of the engineering graduate.

Second speaker on the program was Joseph T. King, A.E.D. Washington Representative, who told members what to look for in the new administration. Referring to President Eisenhower's "State of the Nation" address, he said, there was "the clear implication that all groups must subvert their special interests to the general welfare of the whole people. In this connection you are going to be affected."

Reporting that the Director of the Budget had ordered all agencies to screen their construction projects and eliminate all but the very essential, Mr. King said, "When it comes down to your pocketbook, it is natural for you to say, 'Let them eliminate something else, but don't let them eliminate construction projects.' "

Mr. King said he felt that for the first time in 20 years businessmen would collectively have an opportunity to promote objective and constructive programs designed to solve the nation's major economic problems. He also warned businessmen to keep the general welfare of the people foremost in their minds. This is especially true where controls are concerned.

"Do not conclude," he warned, "that because the President has called for their removals, they may not be reinstated. If business does not restrain itself in the months ahead he will act to assure the stability of our economy."

S. D. Maddock, president of C.I.T. Corporation, opened the final talk of the morning with a preview of market conditions as his firm expected to find them during the next 18 months. Mr. Maddock said that after careful study of market conditions, his company had concluded that, barring all-out war, the following conditions were most likely to exist:

1. Business in general will continue approximately at its present level.
2. Construction equipment will be in about equal demand as at present.
3. The supply of construction equipment will increase as materials become readily available and manufacturers shift more and more to normal domestic production and distribution.
4. With an approximately level demand and a greater supply, competition is certain to intensify.
5. Manpower, particularly good salesmen, will be in increasing demand.
6. Dealers will require more dollars or a faster turnover of your present supply of dollars if they are to hold their own in the period ahead.

In expanding on these points, he said that all businesses wanted to grow. Growth in the present market cannot be measured by dollar volume alone, but also by the number of units sold. "It is not enough to think you are growing just because your dollar sales have gone up, because the price has been inflated," he

The Board of Directors of the Associated Equipment Distributors for 1953.

said. "You grow when you sell more units."

He warned dealers to:

—Keep fixed assets at a minimum.

—Prevent open accounts from becoming a convenient means for the contractor to trade on the distributor's good will for long terms of payment.

—Don't attempt to be a banker to their trade.

Mr. Maddock also warned distributors against failure to recognize the financial limitations of contractors. He said that any financial arrangement, whether handled by the distributor, or by a third party, should be based on realistic rates of payment.

"Remember," he said, "contractors are having a hard time in their financing these days. They have to provide money to pay for heavy duty, high priced equipment and have to provide money to run a high cost job. At the same time, their financial statement must be sufficiently liquid to qualify for bidding and to enable them to make bond. Too much short term debt is a definite handicap and is one of the principal reasons for failure among contractors. Put that down in your book and remember it."

In a brief message to the membership following his installation as president, S. John Oechsle named some general goals toward which the association would work during the coming year. Among these were:

—Expanded work in the fields of customer-distributor and manufacturer-distributor relations.

—Continuation of the statistical research program initiated during the past year.

—Continued expansion of services to the industry provided through the association's executive offices.

The Thursday business session, sponsored by A.E.D. manufacturer members, consisted of a panel discussion on training and education programs conducted by manufacturers and distributors. The discussion covered training of sales, parts, and service personnel either at the factory or in the distributor's locality.

Dr. Harold Maynard, Ohio State University, moderated the discussion with the assistance of Dr. James Davis of Ohio State. Distributor participants on the panel included H. D. Anderson, J. T. Hatten, and S. G. Marks, Marks Tractor & Equipment Co., Cleveland, Ohio. Manufacturer members included John Shaw, International Harvester Co.; E. H. Holt, Barber-Greene Co., and Gordon Nelson, Koehring Co. M. B. Garber, Thew Shovel Company, was chairman of the session.

The social program of the convention consisted of an "Early Birds' Breakfast", the President's Reception, and the Annual Birthday Party Banquet.

Luncheon speakers for the meeting included Gen. Carlos P. Romulo, Philippine ambassador to the United States; Clarence Manion, former head of the University of Notre Dame College of Law; and Harvey Hill, executive secretary of the Industrial Diesel Engine Manufacturers Association.

## Cement Production, Sales Reach New Highs in Japan

According to the Japan Cement Association, both production and deliveries of cement during October reached all-time highs, due mainly to seasonal increase in domestic requirements. October output totaled 662,170 metric tons, against 621,921 tons in September; October deliveries also increased to 682,551 (preliminary) from 649,421 tons (revised) the month previous. End-of-October stocks declined to 198-678 tons from 219,058 tons end-of-September.

The October increase in production and deliveries was achieved in spite of the difficulty in securing sufficient supplies of coal and electric power because of strikes of coal miners and employees of the power industry. This was made possible because cement producers made every effort to secure coal from smaller coal mines and also to use their own power-generating facilities to the fullest extent.

Export shipments of cement during October continued on a very low level of 58,329 tons (preliminary), compared with 58,343 tons (revised) in September.

## Mica Supply Decreases, Needs Increase, NPA States

High-quality mica is decreasing in supply while the needs for the material have been increasing. The National Production Authority has stated that defense requirements will continue to need more mica for production of radar, jet engines, guided missiles and other military devices.

While the need for high-grade mica has been growing the market for low-grade material has declined because of the development of synthetic materials and the improved methods of reclaiming scrap. This has created a squeeze on the producers of mica, as both grades are found in the same deposit and are mined together.

To offset the drop in production, the General Services Administration is purchasing up to 25,000 tons of hand cobbed mica for the national stockpile within the next year.

## 1951 China Clay Production Largest Recorded in History

The domestic production of china clay or kaolin in 1951, according to reports of producers to the U. S. Bureau of Mines, exceeded all previous records. Total output for 1951 amounted to 1,866,299 short tons, valued at $25,324,554. The increase was 6 percent in tonnage over 1950, the previous banner year.

Ten states produced kaolin in 1951, compared with 11 in 1950, Nevada not reporting in 1951. Georgia produced 70 percent of the total United States out put in 1951, the same as 1950. Georgia has been the principal producing state for a number of years. South Carolina was second with 17 percent and Pennsylvania was third with 4 percent of the total. All states, or groups of states, for which statistics are published show substantial gains in 1951 over 1950, except South Carolina.

The use pattern in 1950 was the same as it has been for the past several years; namely, paper, rubber, refractories, and pottery in order of tonnage consumed.

Paper consumed 964,601 short tons in 1951 (52 percent of the total kaolin output, the same as in 1950); rubber used 231,331 short tons (12 percent); refractories, 200,236 short tons (11 percent); and pottery, 141,733 short tons (8 per cent, the same as in 1950). The remainder (17 percent) was consumed for a wide variety of purposes including cement, high-grade tile, fertilizers, chemicals, insecticides, paint, calcimine, and linoleum. The following users registered increases: paper filler, refractories, cement, filtering and clarifying of oils; high-grade tile; linoleum; and paint. Decreases in consumption were reported for pottery, paper coating, rubber, chemicals, insecticides and fungicides, etc.

The average value of domestic kaolin sold or used, as reported to the Bureau of Mines in 1951, was $13.57, compared with $13.68 in 1950 and $13.43 in 1949.

Imports of kaolin for 1951 fell to 110,475 short tons, compared with 122,974 short tons in 1950. Imports represented less than 6 percent of the total domestic consumption in 1951, compared with 7 percent in 1950.

## Mineral Production in Canada Reaches New High in 1952

Canadian mineral production soared to a new high of $1,278,000,000 in 1952, according to preliminary figures of the Bureau of Statistics. This was 2.6 percent above the previous high of $1,245,000,000 in 1951.

Outstanding increases in oil, asbestos, cement, and iron ore outweighed declines for some of the principal metals, including gold, nickel, copper, zinc, and lead.

Non-metallic minerals as a group rose in value to $124,304,000 from $115,707,000 in 1951. Asbestos, the main mineral in that group, increased 9 percent in value to $88,823,000 but decreased slightly less than 1 percent in quantity to 966,000 tons. Barite and fluorspar showed gains in output while feldspar and mica declined. Sulphur in the form of pyrite, sulphuric acid, and elemental sulphur increased 18.6 percent in quantity to 441,000 tons; pyrite from new sources in Quebec and sulphur from natural gas in Alberta contributed to this increase.

## Old Feldspar Mine Becomes Swedish Crude Oil Reservoir

A worked-out feldspar mine at Flaxenvik, Sweden has been converted into an underground crude oil storage reservoir. The oil is held on a layer of water which can be raised or lowered to control the capacity of the storage space. The mine is completely surrounded by a high water table so that the oil is prevented from seeping out, and any water seeping in merely sinks to the bottom.

In converting the mine a heating system to lower the viscosity of the oil for pumping was constructed ninety feet below the surface as well as the necessary pumping works.

## Mines Bureau Urges Change In Processing Pegmatite

Production of critical minerals in the Black Hills of South Dakota would rise substantially if mechanical methods of separating and recovering pegmatite minerals were used instead of hand sorting, Bureau of Mines technologists say in a report released by Oscar L. Chapman, former Secretary of the Interior. This would bring about a more stable mining industry capable of supplying at least part of the nation's needs for beryl—source of the alloying metal beryllium—and other vitally needed metals.

This report, prepared by S. M. Runke and J. B. Cunningham, Bureau metallurgists, and D. H. Mullen, Bureau engineer stationed at Rapid City, S. Dak., is the first of a proposed series of annual progress reports on investigations of the Black Hill pegmatites.

A free copy of Report of Investigations 4928, *Progress Report on Pegmatite Investigations in South Dakota*, may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

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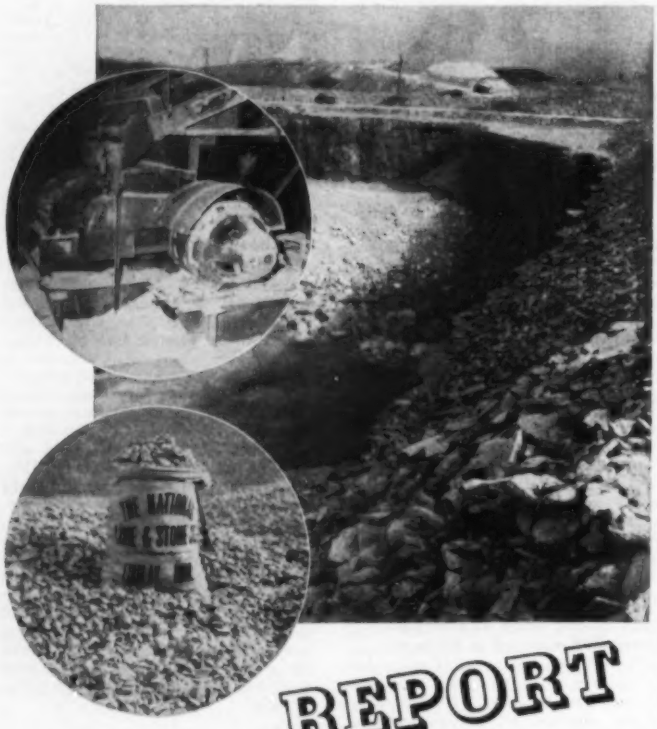
A $50,000 loan has been granted to the Guadalupe Valley Gravel Company of Gonzales, Tex., by the Reconstruction Finance Corporation. The sum will be used to expand the firm's quarrying and soil conservation work. A railroad spur will be built and additional equipment will be purchased.

REPORT

"NO DOWNTIME IN 4 YEARS"

It's that kind of record that makes Eagle equipment a favorite in the limestone field. In addition to the faithful 24 x 24 hammermill pictured above, there is installed in this quarry an Eagle 36 x 42 which takes the rock from the gyratory crusher and reduces it for the smaller mill.

Please write for more details if you're interested.

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## Florida Bulletin Describes Sedimentation Procedures

The Florida Engineering and Industrial Experiment Station recently published Bulletin No. 54, *Sedimentation Procedures for Determining Particle Size Distribution* by Herbert E. Schweyer, professor of chemical engineering, University of Florida. The 19-page report presents modifications of three standardized procedures for accurately measuring the particle distribution below the usual minimum sieve range of 44 microns (No. 325 sieve) and above the colloidal size range of about 0.1 to 0.2 microns.

The methods described include the multiple tube pipette, hydrometer, and turbidimeter, each of which involve the direct measurement of the concentration of particles remaining in suspension rather than the determination of the amount of sedimentary particles that have accumulated after a known sedimentation time. The methods are especially applicable to various nonmetallic minerals, including phosphate, cement, sulphur, metal bearing sands, clay products, and others.

Bulletin No. 54 may be obtained from the College of Engineering, University of Florida, Gainesville, Fla.

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## Film on Truck Operation Issued by Safety Council

The National Safety Council has announced a new sound slidefilm, *Operating Heavy-Duty Trucks Safely*, produced especially for those engaged in hauling operations in quarries, construction, open-pit ore mines, and coal strip mines.

The film shows those who operate and work around heavy trucks the safe practices that will prevent the most frequent and serious accidents on company property. Among the topics covered are safe methods of driving, towing, dumping, riding, and getting on and off heavy-duty trucks. The film features several spectacular shots of accidents.

The 35 mm. sound slidefilm can be used on automatic as well as the bell type of projection equipment. For additional information and prices, write the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

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Cassiar Asbestos Corporation, Ltd., Toronto, Can., has arranged financing to expand its production of nonferrous containing asbestos from the present capacity of 150 tons per day to 500 t.p.d. Capital shares of the company are to be increased with about half of them going to Turner-Newhall, Ltd., and Raybestos-Manhattan, and the balance being offered to present stockholders.

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Sulphur production at Garden Island Bay, La., is scheduled for late 1953. The plant, which is being built by Freeport Sulphur Company, is said to be one of the largest installations ever made in recent years. Production of 500,000 tons of sulphur a year is expected. Building the plant on the soft subsoil required sinking 2,200 piles to a depth of 90 ft. to provide a firm foundation.

# More Information, Please

## CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

**1. Good Masonry Deserves Atlas Mortar Cement.** The sixteen pages of this pocket size booklet deal with the characteristics deemed desirable in a masonry cement. In addition to explaining the desired properties the booklet contains many statements from users of the mortar cement and illustrations of projects on which it has been employed. Universal Atlas Cement Co.

**2. Use of Chicago Fly Ash In Modern Concrete Mixes.** This file size book gives a complete story of fly ash as it is used in concrete mixtures of various types. History, source, its action in concrete, tests of various attributes of concrete made with it, advantages, chemical composition, and specifications for its use are some of the points covered. The facts of fly ash in common and technical language are given in a concise manner. Chicago Fly Ash Co.

**3. Besser Block Cutter. Bulletin No. 98.** This four-page folder illustrates and describes a hydraulically operated block splitter for the production of split concrete block. In addition to showing the machine in different views, uses of the split block are illustrated and diagrams are included to show the types of blocks that can be produced on the machine. Besser Manufacturing Co.

**4. Hardinge Tube Mills. Bulletin No. 18-B.** This 12-page catalog describes a line of tube mills for grinding and pulverizing. Application, construction and specifications for pebble tube mills and ball tube mills are discussed. Illustrations show construction, styles, and accessory equipment of the mills. Hardinge Co.

**5. Kennametal Mining Tools. Catalog M-7.** This well illustrated catalog has its 20 pages filled with information on carbide-tipped mining tools and accessories including cutter bits, drill bits, rock bits, open pit bits, core bits, augers, adapters, drive sockets, and roof pinning rods. A small price book and a pamphlet on cutting and drilling costs are included in pockets in the back of the catalog. Kennametal Inc.

**6. Gruendler Gravel Crushing and Screening Plants. BR 55-10.** The center spread of this four-page folder uses a keyed diagram to show the material flow through a typical portable plant. Close-up photos and descriptive text are numbered in accordance with the diagram so that the features of the plant can be seen and understood. The back page has a table of specifications for six sizes of portable plants. Gruendler Crusher and Pulverizer Co.

**7. Leschen Slings and Fittings. PS-52.** This pocket-size 64-page handbook is filled with photos, drawings, diagrams, charts and specifications on a line of wire rope slings and accessories. Included are such points as sling efficiency, safe loads, rope diameters, and suggestions for correct use. The user of wire rope slings will find a wealth of information in this booklet. A. Leschen & Sons Rope Co.

**8. For Better, Stronger Walls Use Masonry Wall Reinforcing.** The four pages of this folder present the results of tests on cracking caused by pressure and shrinkage on concrete block wall panels made with and without reinforcing in the mortar joints. Tests of bond wire styles and methods of application of the masonry reinforcing mesh are also included. Adrian Peerless, Inc.

**9. Kwik-Mix Moto-Bug. KM228.** Illustrations showing the Moto-Bug power wheelbarrow in use fill most of this four-page folder. Hopper, platform, and lift truck attachments are shown in a variety of industries. Features of the machine are shown in a bottom view. Kwik-Mix.

**10. Velcolite Structural Concrete Aggregate.** This small size folder summarizes the advantages of a pumice aggregate for use in structural concrete. Test results are cited and other literature is offered. Pumice Inc.

**11. Tru-Ax Hi-Production Block Splitter.** Three models of block splitters are covered by this folder. A large electrically operated unit is featured. The machine is pictured and thoroughly described. Specifications are included. Two other models are pictured and briefly described. They are a pneumatic model and a hand model. Truax Machine and Tool Co.

**12. A sure cure for concrete, Littleford Vapor. Clarkson "Kwik-Steam" Generators. Form-MP-98.** Typical installations of the steam generator in curing concrete products are shown. The unit is pictured and described and specifications are given as well as typical layout for a curing room. General information is given about the unit. Littleford Bros.

**13. The New "truck-mate" 4000 lb. capacity, Model 40 High-Lift.** This is a specification sheet that gives a brief description and specifications of a lift truck that is designed specifically for concrete block handling use. Advantages of the model are given. Truck-Mate Div. of The Knickerbocker Co.

**14. How to Use Schedule Numbers in Power Piping Design. Bulletin 815A.** Technical details of determining schedule numbers are explained and examples given. Tables and charts present the material graphically and make the selection of pipe by schedule number a much easier problem. Wall thicknesses are shown. This is an engineering bulletin of interest to piping and power plant personnel. Taylor Forge and Pipe Works.

**15. The New "Rocket" Revolving Drum Truck Mixers.** Photos of loading and discharging of this mixer are shown. Close-up views of major features are included and a keyed photo pointing out features

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March, 1953

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is shown. The folder explains the advantages and lists the features that are included in the new model. Concrete Transport Mixer Co.

**16. How to Build a Form With Gates Concrete Form Ties. Brochure G-2.** The 32 pages of this pocket size booklet contain drawings showing the details of form construction using form ties. Such points as starting, rodding, stripping, corners, studs details, hardware, layout, and many others are covered. Illustrations of actual use are shown on the front cover. Ties for both board and plywood forms are included. Gates and Sons.

**17. Split Rock, for homes of lasting beauty.** Full color illustrations of beautiful homes fill the 12 pages of this large booklet. Close-up details are included to show colors and styles of walls constructed with the units. Some of the features of split masonry construction are pointed out in the brief text. Split Rock.

**18. Dustfoe #15 Respirator.** This folder uses illustrations to present a dust respirator. Construction features are shown in exploded views and the value of each is explained in the text. Sketches show cleaning and filter changing procedures. Mine Safety Appliances.

**19. Oil-Mist Automatic Lubrication System. Form 22-185.** A system of lubricating all types of bearings is presented in the 12 pages of this booklet. Drawings, sketches, and diagrams show the features of the system, its installation, and function. Operation, and advantages are covered. Models and accessories such as nozzles and fittings are shown. Alemite Division of Stewart-Warner.

**20. Products of Fuller Company. GDM-13.** The illustrations in this four-page folder show typical installations of products manufactured by the company. The text explains the various products made. Included are conveying systems, Airslide, Airveyor, compressors and pumps, coolers, feeders, valves, level indicators, aeration units, etc. This equipment is used for conveying and controlling dry pulverized, crushed or granular materials. Fuller Co.

**21. TSP Products for the Cement Industry. Bulletin No. 452.** This six-page folder shows the items made for use in the cement manufacturing industry. Illustrated are hardened gears and pinions, hardened wheels, and other hardened products such as drums, sprockets, shafts and bushings. Typical applications are summarized and a list of representatives is given. The Tool Steel Gear and Pinion Co.

**22. Here's What Trabon Centralized Lubrication Systems can do for you. Bulletin 529.** The four pages of this loose-leaf insert folder show two systems for lubricating bearings. Diagrams show the distribution systems and the text explains the features of each. Types of lubricant pumps are shown on the back page while the front summarizes the major advantages of a centralized lubrication system. Trabon Engineering Corp.

**23. Curing Concrete Blocks with Steam Shortens Curing Time, Reduces Inventory Needs, Frees Working Capital.** This is a catalog insert type of folder. The steam generating unit is pictured and tables are used to capacities and costs. Specifications of three models are given. Information on curing concrete blocks and on constructing curing rooms is included. Malsbary Manufacturing Co.

**24. B. F. Goodrich Conveyor and Elevator Belts. Catalog Section 2200-1.** The six pages of this publication use enlarged photos to show belt construction while the text points out the value of the construction. Two sets of comparison photos and captions show the action of plies in bending around pulleys and explain the reasons for constructing belts to give longer life. Splicing is explained and the features pointed out. B. F. Goodrich Co.

**25. Vacseal Solids Handling Pumps. Bulletin PB-82.** The twenty pages of this booklet give a complete story on a pump used for handling abrasive pulps, slimes, corrosive solutions, slurries, concentrates, cements, sludges, gravel, semi-solids, and similar materials. The booklet covers the principles of design and operation, types, capacities and sizes, assembly drawings, selection, installation, and operation of this type of pump. A list of other types of pumps and of other equipment is given on the back cover. The Galigher Company.

**26. Waukesha Super-Duty Diesels. Bulletin No. 1625.** Photos show the various models of diesel engines available in horsepowers from 27 to 570. Some typical uses are shown and specifications are included for the engines and for power unit assemblies. Waukesha Motor Co.

**27. Bickerstaff Block Forks.** This folder uses photos to show the use of the fork truck in handling cubes of concrete block. Picking up cubes without pallets, stacking, loading and preparation of cubes are illustrated. The text is limited to a few brief headings. The forks are equipped with automatic grippers that hold the block when the load is applied to them. Bickerstaff Inc.

**28. Ceramic Glazed Concrete Block.** This four-page folder illustrates and describes a method of glazing concrete block with a ceramic glaze that is vitrified onto the block in a kiln. A concrete block drier is also described. This folder is designed to acquaint the prospective user with recent developments in these fields and to solicit specific inquiries about them. Ferro, Allied Engineering Div.

**29. Burmeister Tilt-Up Mixers. Bulletin 19025.** The sixteen pages of this bulletin cover features of 3 and 4 cu. yd. tilting mixers, semi-portable plants, dry batch plants, semi-portable bulk cement plants and bins, 3-compartment and standard aggregate bins, elevators, bin gates, valves and bottoms, screw and belt conveyors, and plant installations. Dimension drawings are shown for most of the equipment covered while the brief text explains features not shown by the drawings or photos. L. Burmeister Co.

**30. Why do it the "hod" way? Form. RB-101.** The four pages of this folder are filled with illustrations of a line of portable conveyors for handling concrete block, brick, tile, mortar, wet concrete and similar materials. The conveyors are portable and lightweight. Many uses are shown. American Conveyor Co.


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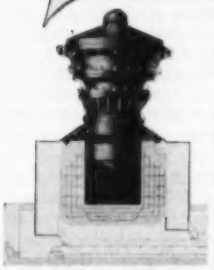
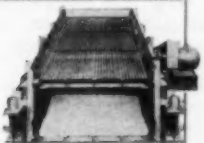


GYRATORY CRUSHER—70 degree double discharge outlets solve sticky ore problem.



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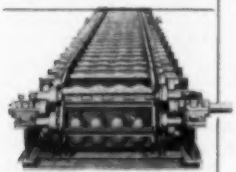

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An outstanding characteristic of KVS equipment is the fact that all parts are standardized . . . replacement can be made by any qualified machinist . . . spare parts FIT, because they are machined to exacting tolerances . . . ready for instant use. When the rare occasion arises where replacements are necessary, air express deliveries bring you the part needed anywhere in the world and the machine is back in operation within a matter of hours!

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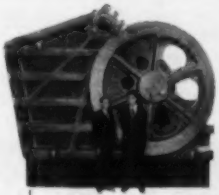

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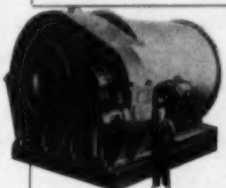

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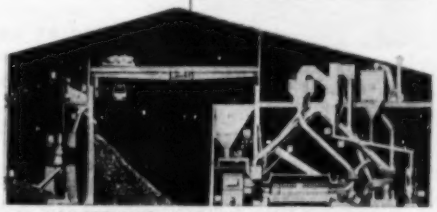

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**STONE PRODUCERS**

(*From page* 133.)

"This is the most important regulation in the field of vibration effects in the history of the quarrying industry. It finally sets up a specific, technically accurate yardstick by which an operator can measure his performance without ambiguity or being rendered subject to unreasonable or vicious complaints through outmoded court procedures or uninformed officials.

"The New Jersey allowables are based primarily on Crandell's energy ratio relationships. They are slightly higher than Bulletin 442 at the highest frequencies, but the Bureau of Mines informed Krueger that they now regard their figures at the highest frequencies as unduly and unrealistically restrictive. When ground frequency and displacement have been determined by approved means of instrumentation, the allowable limits are: frequency up to 10 cycles per second, maximum amplitude 0.0305 in.; up to 20 cycles per second, maximum amplitude 0.0153 in.; up to 30 cycles per second, maximum amplitude 0.0102 in.; up to 40 cycles per second, maximum amplitude 0.0076 in.; up to 50 cycles per second, maximum amplitude 0.0061 in.; up to 60 cycles per second, maximum amplitude 0.0051 in.

"The maximum allowable sound pressure beyond quarry property lines resulting from quarry blasting is not to exceed 100 decibels," the speaker said in conclusion.

**Operating Problems** The second session for operating men and equipment manufacturers represented an innovation in that the presentations were handled almost entirely through the medium of slides and moving pictures. G. D. Lott, Jr., Palmetto Quarries Co., Columbia, S. C., presided at the session, and the operations of eight well-known companies were featured in the program.

The companies, locations and narrators were as follows: Consolidated Quarries Corp., Rock Chapel plant 20 miles east of Atlanta, Nelson Severinghaus narrator; Harry T. Campbell Sons Corp., Texas, Md., Edwin Reichart narrator; Lynn Sand & Stone Co., Swampscott, Mass., Ted Cooke narrator; New York Trap Rock Corp., plants in various locations throughout New York State, Luther F. Miller narrator; Cowan Stone Co., plant at Cowan, Tenn., George T. Henley narrator; Consumers Company, Chicago, Ill., C. E. Hogeboom narrator; Greystone Granite Quarries, Inc., Henderson, N. C., W. E. Johnson narrator; and Camp Concrete Rock Co., Ocala, Fla., represented by Clarence Camp II.

**Churn Drilling** Also included in the second operating session was a discussion of churn drilling *versus* rotary drilling. The case for churn drilling was presented by James H. Grove, Jr., manager, M. J. Grove Lime Co., Frederick, Md.

"The churn or percussion and the rotary machines," Mr. Grove said, "are used principally for primary drilling by our companies. When we speak of the percussion type drill, we are speaking of the type which many of you operators know as the Quarrymaster or churn drill.

"The quarry which is the basis for my remarks is known as Grove Limestone of the Ordovician Age. The quarry has a few layers of limestone of 1 percent silica, but the majority of this deposit is full of rounded grains of glassy quartz which runs up to 25 percent silica. The silica content of this stone during the past several years has averaged 18 percent.

"My first experience with the older type of churn drills was satisfactory for conditions under which


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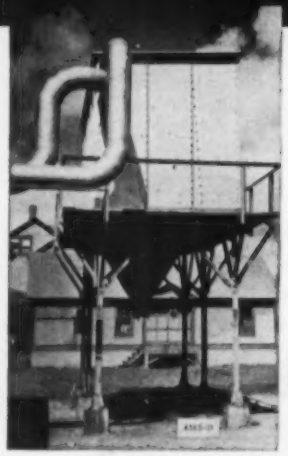

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they operated. When the Quarrymaster type drill became available, we were operating six of the older churns or well drills, drilling 6-in. holes averaging 1¼ ft. per hr. In October, 1948, our company purchased a Quarrymaster, and by the end of the year we had discontinued the use of the old type well drills and our bit sharpening department. It could be added that the older type churn drill can still be used to excellent advantage in some circumstances—particularly in quarries of high faces, or where it is necessary to drill a large-diameter hole for the placement of sufficient explosives to get proper breakage.

"We like the percussion-type drill because it can drill any kind of rock from the softest limestone to the hardest trap rock. Secondly, because it has drilling speed, we have seen it drill in limestone with less than 4 percent silica up to 35 ft. per hr., while in this quarry of ours it will average 7 ft. per hr. on a yearly basis. Third, you obtain low bit cost. We have averaged 1860 ft. per bit over the last three years by using the Carset bits. I wish to call your attention to the fact we re-dress our Carset bits with a portable air grinder after each 30 to 35 feet of drilling.

"The Quarrymaster is a completely self-contained unit. It can be moved quickly on its crawlers, and the hydraulic jacks save time in set-ups. The Quarrymaster requires no water. You have no winter freezing to shut you down.

"The Quarrymaster drills a clean hole. All cuttings are continuously removed by air and collected.

"We have had some slight experience with rotary-type drills in our quarry. We have observed that you cannot get this rotary type machine as close to the quarry face as necessary at times. If you space your holes too far back for your quarry face, you cannot get proper breakage. You operators know that proper fragmentation results in increased primary crusher output and reduced cost in loading, secondary drilling and blasting.

"We have also noticed in our particular rock that the holes are not as straight with the rotary type of drill. When holes lead off, you bend the drill stems. These, however, are not hard to straighten.

"Our slight experience shows the 6-in. rotary bit to have an average life of 285 ft., as compared to 1860 ft. for the 6-in. carset for four years.

"Our production is 7 ft. per hr. with the churn-type drill against 12 ft. per hr. on rotary. So, do your

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Men and equipment must be free to work around the clock in any kind of weather . . . free to work despite rain squalls, spring thaws or the gradual seepage of surface water through the overburden.

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The Bessemer Limestone Company, a Republic Rubber customer for more than a generation, uses Republic's Water Hose for this purpose.

They use Republic Hose because it stands up better, handles easier, lasts longer on the job.

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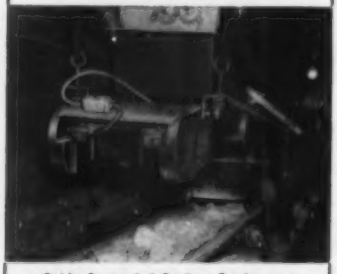

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own figuring on final cost per foot.

"The manufacturers of drilling equipment are to be congratulated on the progress they have made during this decade. They have certainly helped the quarry operators primary drilling problem in many ways.

"Far be it for me to say which type drill is the better. There is a place for each type, and it is up to each of you operators to decide which type better fits into your operating conditions."

**Rotary Drilling** The case for rotary drilling was presented by J. M. Christopher, superintendent, East St. Louis Stone Co.

"The stone in our quarry," Mr. Christopher said, "is a fairly hard limestone, and we formerly used three churn drills to do our primary blast-hole drilling. When we are on a double shift, as we are most of the time, it takes from 140 to 160 ft. of primary hole per day to keep the plant supplied with rock.

"With our old churn drills we were averaging 2.5 ft. per hr. per drill. This meant that we had to run our drills 24 hr. per day and most of the time six days per week, the sixth day being a penalty day. True, I'll grant that our 2.5 ft. per hr. average is probably not quite as good as it should have been, but there are two outstanding reasons for it not being quite up to par: reason No. 1 is that the drills were old and were to the point where they required almost constant maintenance, and our footage is based on the number of hours the operator and his helper actually put in, whether in making repairs or drilling.

"Reason No. 2 is that we live and operate in a vicinity where the labor market is hot. I mean that we have a large amount of construction work going on, and with construction wages slightly higher than ours, we have a large labor turnover. As a result of this, of the nine drill operators that we require, only two have stayed with us over a period of years. Now, if any of you have had to break in new drillers and then lose them later on in the season, you will agree with me that it takes considerable time and expense for a man to get the knack of using a churn drill to get maximum footage.

"So from what I have told you, you can readily see that we were in a spot where something had to be done about our drilling costs and labor. After reviewing these facts our company decided to buy a new rotary drill. This drill was placed in operation the first of July, 1952, and here is what we found.

"The drill, even though it is of considerable size, is very maneuverable, more so than our old churn drills. The rotary, with its large hydraulic leveling jacks, can move over a hole and level itself off in about one-third the time it takes the churn drill. The rotary is dependable. We have had it in operation from the first of July, 1952, up to the present time without a forced shut down.

"Our footage average is now 20 ft. per hr. as compared to our churn drills' 2.5 ft. per hr., drilling the same size hole. On tests we have drilled as high as 40 ft. per hr.

"We have averaged 1100 ft. of hole per rotary bit. Our churn drill bits required sharpening every 35 to 40 ft.

"We have been doing our drilling in the bottom of our quarry, taking out a 35-ft. lift. The top stone is shattered from previous blasting to a depth of 3 to 5 ft. It was difficult for our churn drills to start a hole in this shattered rock. In some places we would have a hole about 3 ft. in diameter at the top before the bit could get down to solid rock. Also some of the holes had to be abandoned because of loose rock falling into them. Our rotary has no difficulty at all under these conditions. It drills smooth, clean holes—the air pressure packs the fines from the cuttings into the loose rock and holds it solid. To date we have not lost a hole drilled by the rotary.

"As for drilling in loose rock, we pulled one trick with this rotary that I don't believe could be done with a churn drill. We were working a 35-ft. face, and after a shot was down and the shovel started loading out the shot stone, we discovered a nice toe at the bottom of the pile. Of course, some operators are fortunate, inasmuch as they never have a toe, but most of us occasionally do. The pit foreman found this toe to be about 3 ft. in depth. While he debated as to his way around it, our driller suggested that we get the dozer down and level a road for him over the shot stone pile. The pile was bank high and firm, so we leveled off, ran the rotary out, drilled 3 holes down through 30 ft. of shot stone, loaded and shot them immediately. The shovel moved back in and tore out the toe without any further difficulty.

"We operate one churn drill with the rotary. Because of the increased footage and efficiency of our rotary drill, we have been able to cut our drill crew from 18 men to four men, and our blacksmith's and helper's time to about one-third. Also by

drilling the same number of hours that the plant operates, we have had plenty of stone ready for our operation.

"These are the basic facts and figures on our rotary drill. Insert your own wage scales and you can figure your own costs. Our rotary is a Joy Champion Heavyweight with a boom extension to handle 30-ft. drill pipes, using a 6¼-in. bit."

**Adequate Roads** The problems of providing an adequate system of roads and streets to meet the needs of today and of tomorrow were discussed during the closing session, presided over by A. L. Worthen, president, New Haven Trap Rock Co.

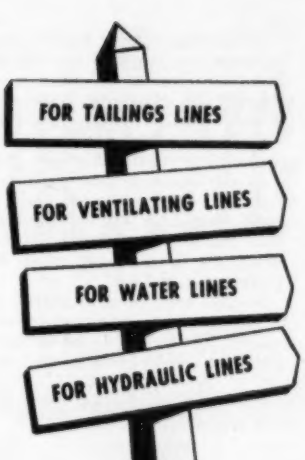
"At too many critical points our roads are far behind needs in structure and capacity," Arthur C. Butler, director of the National Highway Users Conference told the stone producers, detailing the many diverse factors responsible for our present highway muddle.

Secretary of Project Adequate Roads, a movement sponsored by a wide variety of national interests, Mr. Butler was able to outline graphically the high cost that our present under-par highways bring us in terms of general economic welfare, national defense, and safety.

By working with groups at all levels, P.A.R. attempts to bring about an organized, intelligent program for improving and expanding the nation's lifeline (its highways) to meet the needs that exist or can be foreseen. Basically a public relations movement, P.A.R. tries to bring the facts of highway economics and the many factors that enter into the highway problem to the attention of every citizen so that "informed Americans in every state will demand the application of sound principles to the development of highways".

P.A.R. seeks to improve highways according to need, to classify roads into proper systems, to provide adequate funds, to restrict highway use taxes to highway benefit, to fairly distribute highway costs to all who benefit from highways, and to improve highway administration. To these ends it has developed techniques properly to evaluate highway capacities and needs and it has undertaken to spread the gospel of adequate highways.

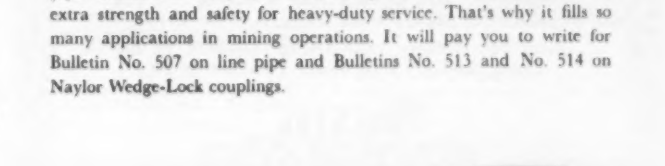
**Throughway Construction** The dire need for highway reconstruction and expansion in every state has brought about the construction of toll roads in 30 of the states at present, B. D. Tallamy, superintendent of the New York State Department of Public Works,


*You're on the right track with*

**NAYLOR PIPE**

You can't go wrong with Naylor pipe for lines in mining service. Naylor gives you a light-weight pipe that's easier to handle and install—especially with Naylor's Wedge-Lock couplings. It differs from other light-weight pipe because it is built with a lockseam spiralwelded structure that adds extra strength and safety for heavy-duty service. That's why it fills so many applications in mining operations. It will pay you to write for Bulletin No. 507 on line pipe and Bulletins No. 513 and No. 514 on Naylor Wedge-Lock couplings.




**NAYLOR PIPE COMPANY**
1257 East 92nd Street, Chicago 19, Illinois
*New York Office: 350 Madison Avenue, New York 17, New York*

told the meeting. With normal highway funds insufficient to meet the needs born of today's expanded traffic load and booming urban and suburban expansion, the toll road is a thoroughly "sound" proposition, the speaker maintained.

America's strength has derived from its ability to keep pace with the needs for wholly adequate transportation systems, Mr. Tallamy declared, outlining the growth of our highways since the first toll road was built back in Washington's administration to open up the country beyond the Alleghenies to Philadelphia and the sea.

By building modern limited-access highways we lengthen the efficient life of the highway, contribute to an orderly and economic community growth, advance safety, and make many other contributions to the community, he said. But such highways are usually needed where land costs are greatest, and financing bodies are hard put to underwrite them out of normal highway funds. Hence the need for toll roads, Mr. Tallamy pointed out.

Needed *now*, toll road systems are by far the most important highway systems in the nation, he declared. They are self-liquidating, and meet the most urgent need immediately. But, unfortunately, toll roads are being built without co-ordination of design, standards, methods of operation, etc., from state to state, because the Federal Aid program does not include them.

Mr. Tallamy explained the financing methods and engineering policies being used in constructing the New York Thruway, and urged that all interested parties work toward a standardization of toll-road policies and operations. He also urged that the federal highway user tax be returned complete to the states.

**Modern Base Construction** A relatively new type of stabilized aggregate base construction was described by Charles E. Proudley, Chief Materials Engineer, North Carolina State Highway and Public Works Commission, Raleigh, N. C., in the paper *Modern Construction of Pavement Bases with Crushed Stone.* Mr. Proudley discussed the recent construction of a 16.55-mile 24-ft. wide pavement between Charlotte and Concord, N. C., consisting of a combination 14-in. crusher run soil base, topped with a 3-in. double-layered bituminous surface. The project, which was completed in September, 1952, has proved to be highly successful, he reported. The base material was supplied (in place) at a cost of $1.91 per sq. yd.; the bituminous surface treatment at 33 cents per sq. yd.

Mr. Proudley stated that the stabilized aggregate for the base consisted of four parts of completely-graded crusher-run stone (slate) obtained from the Midland Quarry of the Superior Stone Company and one part of selected non-plastic lean sandy topsoil (type A-2-4) obtained from sites 5 and 25 miles from the quarry. The special features of the job were the accurate control of the gradation of aggregates, the addition of approximately 5 percent water used to effect the most economical compaction of the base, the addition of calcium chloride (7 lb. per ton of aggregate) to the top course of the base, and the thorough blending of all ingredients in a continuous-mixing type pugmill.

"Laboratory tests were made in advance to establish the proportions for maximum density. It was found that the 4:1 mix gave a weight per cubic foot of 142 lbs. when compacted in accordance with A.A.S.H.O. Method T 99, which meant that there were 83.5 percent solids or 16.5 percent voids.

"The rigid specifications for gradation of the stabilized aggregate were as follows:

**WIDE OPEN for Full Capacity Production on Troublesome Fine Mesh Screening**

Notice the difference between the two screens in the unretouched photograph above. Even in this small view you see the glazing over of the mesh by damp fines on the front screen while the rear screen is wide open.

FlexElex electric heating of jackets makes the difference. Both screens were started at the same time. After only ten minutes the initial build-up of damp fines is plainly visible on the unheated screen. Eventually this leads to costly, time-consuming blinding and substantial production loss.

For days of full capacity operation, install new Leahy Screens equipped with FlexElex, the electric heating arrangement that pays for itself in months . . . and continues to pay increased profits.

**Send for Bulletin 15-J (Note: Owners of old Leahy Screens may order FlexElex to fit.)**

The DEISTER CONCENTRATOR COMPANY

*The Original Deister Company, Inc. 1906*

**911 Glasgow Avenue, Fort Wayne, Indiana**

Passing 2 in..... 100%
Passing 1 in.....75 to 90%
Passing ½ in.....60 to 75%
Passing No. 4....45 to 60%
Passing No. 40...15 to 30%
Passing No. 200.....not less than 5% of the total aggregate nor more than 2/3 of the amount passing the No. 40 sieve.

The plasticity index was limited to 6 and the liquid limited to not more than 25 percent".

In order to obtain uniform blending, it was decided "that vigorous mechanical mixing such as was secured in the asphalt mixing plant type of pugmill was a necessity. Also, uniformity demanded that vibrating pan proportioning equipment be used for stone, soil, and calcium chloride. Even these could not be relied upon and one inspector watched the belt constantly on which the blend was carried to the pugmill and if any of the materials were observed to vary in amount the conveyor belt was stopped instantly and not started until the condition had been corrected. After proportioning, no stockpiling was permitted.

"The moist, stabilized aggregate was trucked an average 19 miles to the project and spread by means of two Jaeger spreaders, which were operated side by side to give a full width of 24½ ft. for each layer. The project was divided into sections approximately 2 miles long and the first two layers placed and compacted before proceeding with the last two. This was to protect the subgrade from damage by rain or traffic. The first two layers were each 5 in. loose which compacted to 3¾ in. each. The third layer was 4 2/3 in. loose compacted to 3½ in. and the top layer, in which calcium chloride was incorporated, was placed 4 in. loose which gave 3 in. compacted. Core measurements taken during the construction gave information from which corrections in these thickness measurements were made in order to assure a full 14-in. final base thickness.

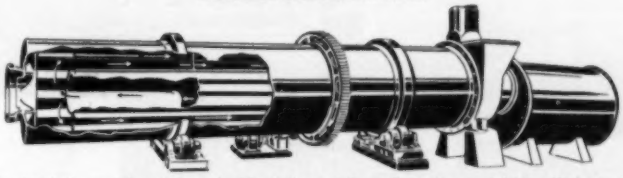
"The contract called for equipment sufficient to mix, spread and compact 2,000 tons per day. A daily average of between 1,700 and 1,800 tons was the actual rate although the highest tonnage on one day was 3,100.

"Consolidation of each layer was accomplished with rollers having a weight of 330 lb. per inch width of tread. The first rolling had to be done with a rubber-tired straight traffic roller, which "set" or bonded the surface particles so that subsequent rolling done with steel-wheeled


IS
DRYING
YOUR
PROBLEM?
RUGGLES-
COLES
DRYERS

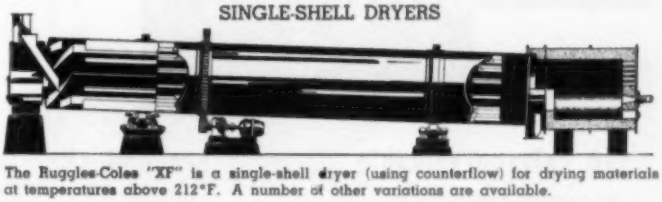
Hardinge makes six distinct types of Ruggles-Coles double and single shell Rotary Dryers, designed for direct, indirect and steam heat. Modifications of these standard types are also made to take care of peculiar drying problems which cannot be handled by standard equipment. Write for Bulletin 16-D-8.

DOUBLE-SHELL DRYERS



The "XA" Dryer (above) is a double-shell semi-direct heat dryer of high efficiency for materials that can be dried in direct contact with combustion gases and heated above 212° F. Type "XB" is a similar, double-shell unit with complete separation of material and combustion gases.

SINGLE-SHELL DRYERS

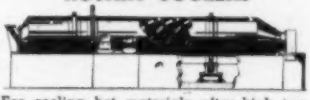


The Ruggles-Coles "XF" is a single-shell dryer (using counterflow) for drying materials at temperatures above 212°F. A number of other variations are available.

ROTARY KILNS

For continuous calcining, roasting or oxidizing. Retractable firing hood. Available in sizes from 3' to 9' diameter — 30' to 90' long.

ROTARY COOLERS



For cooling hot materials after high temperature drying or calcination. Available in three types: air cooled, water spray cooled, and semi-submerged. From 3' to 10' in diameter, shell lengths to suit.

HARDINGE
COMPANY, INCORPORATED

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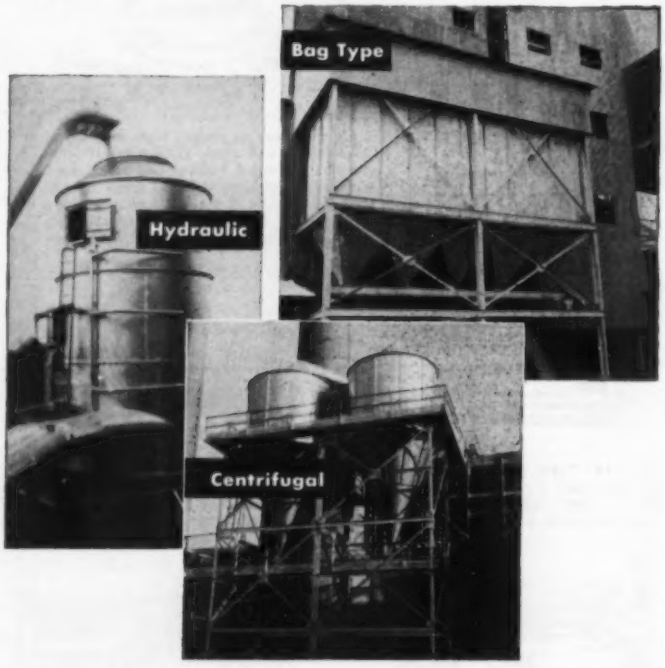
# Cancel the High Cost of Dust and Fume Damage with Norblo engineered collection equipment . . .




## and salvage valuable elements economically!

Dust and fume collection fits into processing and manufacturing *in a big way*. Norblo has helped to implement this valuable aid to safety, health and economy in a big way with outstanding developments in three principal types of collection — Centrifugal, Hydraulic and Bag systems.

Norblo Systems are making new records for high recovery with low operating and maintenance costs. High-efficiency equipment is engineered to include the correct factors to suit your needs and carries the Norblo guarantee of performance. Get the facts on Norblo Dust and Fume Collectors before you decide on any dust or fume collection equipment.

**The Northern Blower Company**
Engineered Dust Collection Systems for All Industries
6407 Barberton Ave. OLympic 1-1300 Cleveland 3, Ohio


rollers would not pick up the base material. The favored roller was the ring roller which consisted of railroad car wheels with the flanges trimmed off mounted the same as the rubber-tired traffic roller wheels. Wobble-wheel rollers were not effective. Three passes of the rollers for each loose inch thickness of base usually accomplished the required density. The density was checked by tests, however, before proceeding with subsequent operations.

"Density of the subgrade was checked frequently by means of the Rainhart Volume Meter. Compaction was not considered to be adequate until it had reached 100 percent of that established by the laboratory. The compaction determinations ranged from 100 to 105 percent of A.A.S.H.O. Method T 99 for most of the job and slightly higher in some instances.

"Calcium chloride was used in the top layer to maintain stability and to prevent dusting and raveling until it could be primed for surface treatment. Another device for assuring a satisfactory prime of the base was the use of a drag broom behind the ring roller when the top layer was being compacted. The broom has steel or fibre bristles which distributed the fines and gave a smoother surface of uniform texture.

"Another important construction feature was that the shoulders were built up simultaneously with each layer and that rolling of the joint between them was done so as to support the base material with shoulder material as a form and yet not run the risk of base material being contaminated with shoulder material. This rolling of the shoulder and base together provided an impervious seal to prevent infiltration of water. Except when caught by heavy rain before a layer of the base was compacted, there was no need of shoulder drains since the compacted base was actually impervious as a result of its careful blending and uniformity through plant control."

Mr. Proudley demonstrated the stabilized aggregate base construction by means of an excellent moving picture. The film depicted the entire operation, from blending and mixing through rolling.

---

For the 12 months ended December 31, 1952, the Warner Company, Philadelphia, Pa., reports gross sales of $21,628,333 and net income of $2,351,667 (unaudited), as compared with $23,884,326 and $2,592,001, respectively, in 1951. A net loss to the company of $83,774 was recorded through the abandonment of a magnesia plant.

# personal mention

FRED J. WEISS, director of production, was promoted to assistant director of manufacturing and D. R. MORRIS, director of inspection and quality control, was named director of production by the National Gypsum Company for the Kansas Ordnance Plant.

WILLIAM F. ROESER, consultant for the Building Technology Division of the National Bureau of Standards, recently received the Meritorious Service award of Sigma Tau, national honorary engineering fraternity. He has been a member of Sigma Tau's National Council since 1934 and its national vice-president since 1948.

GLOVER JOHNSON and VERNON F. TAYLOR were recently named directors of the International Minerals & Chemical Corporation, Chicago, Ill. Mr. Johnson, a member of White & Case, counsel for the company. Mr. Taylor is president and a director of the Peerless Oil & Gas Co., San Antonio, Tex. Previously he had been president of Eastern Clay Products, Inc., before that company's assets were acquired by International.

IRWIN L. CLYMER, president of the Michigan Limestone division of United States Steel Company, retired from this post on December 31, 1952. He was succeeded by HUGH SUTHERLAND LEWIS, who had been executive vice-president of the division.

Mr. Lewis, a 1922 engineering graduate of the University of Mississippi, joined the engineering department of Michigan Limestone in 1926. After holding various positions in that department, he was named chief engineer in 1940. Two years later he became operating manager, and in 1945 he was named vice-president of operations. He was promoted to executive vice-president last August.

National Gypsum Company has announced several promotions among its sales personnel. A newly created position, director of trade relations covering six Western Districts, will be filled by C. GUSTAVUS, formerly district manager in Dallas. Advanced to district sales managers are J. L. PHILLIPS, Dallas; A. T. JOHNSON, Detroit, and J. E. PEEPLES, Jacksonville. New assistant district sales managers include N. R. SHOTWELL, Jacksonville; M. H. BAKER JR., Pittsburgh; E. F. GROSSE, Cleveland; J. R. RITCHEY, Kansas City, and J. C. WALL, Cincinnati.

RUSSELL G. HAWORTH, resident manager of Potash Company of America, Carlsbad, N. M., was recently appointed vice-president in charge of production in addition to his present position.

WILLIAM J. F. FRANCIS has been appointed general sales manager, Western sales office, American Potash and Chemical Company. He succeeds DAVID B. SCOTT, who has retired.

DAYTON L. PROUTY, DANIEL J. BOONE, and JOSEPH A. KELLEY have been named vice-presidents of the Zonolite Company, Chicago, a producer of vermiculite.

JAY B. FORD JR. has been made assistant general manager of the United States Potash Company.

HULBERT S. ALDRICH, president of the New York Trust Company, has been elected a director of the Penn-Dixie Cement Corporation, replacing CHARLES J. STEWART, who resigned.


**WELLMAN *Williams Type***

**PERFORATED DRAGLINE BUCKET**

***speeds the wet jobs***

● You get big loads fast with this Wellman Perforated Dragline Bucket because excess water goes out while gravel stays in on jobs such as illustrated.

Built of special alloy steel—all welded for strength plus light weight. You can work faster with less maintenance with Wellman dragline buckets.

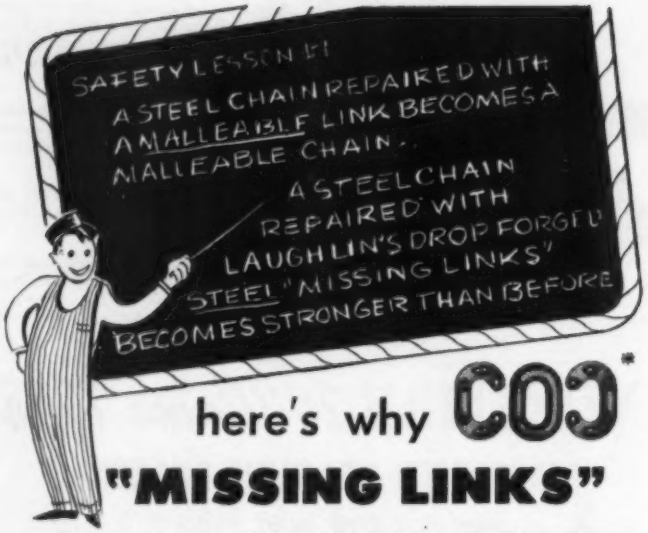
***Want Facts?***
*Write for free descriptive bulletin.*

**Dragline, Clamshell, Custom-Built Buckets, Stone and Wood Grabs.**

**THE WELLMAN ENGINEERING COMPANY**

**7000 Central Avenue**

**Cleveland 4, Ohio**


SAFETY LESSON #1
A STEEL CHAIN REPAIRED WITH A MALLEABLE LINK BECOMES A MALLEABLE CHAIN.
A STEEL CHAIN REPAIRED WITH LAUGHLIN'S DROP FORGED STEEL "MISSING LINKS" BECOMES STRONGER THAN BEFORE

here's why COC* "MISSING LINKS" REPAIR CHAINS BETTER

**"MISSING LINKS"**

**MATCHED**

Made with special dies so that each half is pressure fitted. This eliminates play between the forgings, insures perfect fit when riveted into chain. There is no strain on the rivets.

**INTERLOCKING LUGS**

More costly to put in the dies, but they grip firmer and really do the work of taking the load.

**ORDINARY LINKS**

**UNMATCHED**

When loose fitting links are put into a chain and the load is applied, the rivets take most of the strain and tend to shear until the links set. This may later cause the link to open up under heavy load.

**ROUND LUGS**

Ordinary round lugs fitting into round holes don't have the holding power, tend to shear or force out under strain.

Laughlin "Missing Links" are made of carefully heat treated, high grade steel. They have features found in no other repair links, and are also supplied in an exclusive pear shaped design in sizes for ⅜" to 1⅛" chain.

**Buy From Your Local Distributor**

He is in business to give you prompt, courteous service and to save you money, time and trouble. He's your one best source for industrial supplies.

FOR SAFETY'S SAKE SAY LAUGHLIN

THE THOMAS LAUGHLIN CO.
322 Fore St., Portland, Me.

*T. M. Reg.


RALPH L. DICKEY, president, The Kelley Island Lime and Transport Company, has been appointed a member of the Natural Resources Committee of the United States for 1952-53. This committee develops the national policy pertaining to natural resources, including percentage depletion.

JOHN P. PEACOCK, manager, Stone and Slag Division, Bethlehem Steel Company, has retired after 35 years of service in various capacities in the company's raw materials division, primarily in the limestone producing units. He is succeeded by H. T. MCILWAIN, general superintendent of Bethlehem's Bridgeport and Hanover quarries and Sparrows Point foamed slag plant.

HARRY H. MITCHELL, former deputy chief, Legal Affairs Branch, of the German occupation forces, has been named secretary and corporation counsel of the Lehigh Portland Cement Company.

FRANK L. STELLNER, director of purchases for the United States Gypsum Company, has been appointed secretary and treasurer. He succeeds Wayne Irwin who has taken a similar position with the Pullman Company.

J. L. MEALY, former sales manager of the Thomson Phosphate Department of International Minerals & Chemical Corporation, has been appointed sales manager, direct application, rock phosphates

In his new position, Mr. Mealy will have full responsibility for all sales of finely ground phosphate rock for direct application to the soil. At the same time Mr. Mealy has assumed the responsibilities, in connection with sales, of MISS M. C. BOYLE, manager of the Thomson Phosphate Department, who has taken an advisory status prior to her retirement on March 31, 1953.

HERBERT S. FAIRBANK, deputy commissioner of the U.S. Bureau of Public Roads, was awarded the Roy W. Crum Award for Distinguished Service during the 32nd annual meeting of the Highway Research Board in Washington. The award is presented annually in recognition of "outstanding achievement in the field of highway research."

Mr. Fairbank has been deputy commissioner in charge of all research for the Bureau of Public Roads since 1943. He has directed a large research program independently and in co-operation with state highway departments and universities.

National Gypsum Company officials have announced the promotion of JOHN N. CRAWFORD to the position of commodity manager in wallboard, succeeding RICHARD GLAZIER, who was recently promoted to assistant to the general commodity manager.

Formerly assistant commodity manager in wallboard, Mr. Crawford has also been a product engineer in the Mason Supply Division. He is a graduate of Lawrence College, Appleton, Wis., and served in the Air Corps from 1943 to 1945.

The appointment of DANIEL T. WARNER JR. as Chicago traffic manager of Universal Atlas Cement Company, succeeding Eric R. Gustafson, was announced recently by L. W. Carrier, general traffic manager of this U.S. Steel subsidiary. Mr. Gustafson retired on December 31, 1952, after almost 44 years of service with the company. Mr. Warner, who has been assistant to Mr. Gustafson, will be succeeded by GEORGE A. SMITH, who has been chief clerk in the cement company's traffic department in New York.

E. J. Norris Jr.

Officials of the Calaveras Cement Company on January 17 announced the appointment of EMMETT J. NORRIS JR. as assistant treasurer of the concern.

Mr. Norris has been with Calaveras since 1930, and has been serving as chief accountant for the last eight years.

The promotion of ROY DYGERT to the newly created position of market research analyst has been announced by National Gypsum Company officials. Mr. Dygert will contact contractors throughout the country for Gold Bond products.

Formerly construction consultant in the Buffalo district sales department, Mr. Dygert has also served in the research department. Mr. Dygert is a graduate of Michigan State College and served for 3½ years in the Army Air Force.

The appointment of EARL R. BRYANT as technical service director of Universal Atlas Cement Company, succeeding HOMER G. FARMER, who retired on December 31, 1952, after 41 years of service with the company, has been announced by Fred T. Wiggins, vice-president and general sales manager of this U.S. Steel subsidiary.

W. R. Blair, vice-president and manager of Southwestern Portland Cement Company, El Paso, Tex., has announced the following changes in personnel: HERMAN LIEBREICH has been promoted from sales manager to assistant manager of the firm.

THAD A. STEELE has been advanced from assistant sales manager to sales manager.

JAMES C. CLARY has been promoted to assistant sales manager.

Mr. Liebreich has been affiliated with the firm since 1920. He was made assistant sales manager in 1929 and sales manager in 1945.

Mr. Steele joined the Southwestern staff as a salesman in 1936. He was named assistant sales manager in 1946.

Mr. Clary has been with the concern since 1938. In 1952 he was appointed assistant to the sales manager.

**Most leading makers of heavy-duty earth moving equipment specify Johns-Manville Industrial Friction Materials**

Here are good points to remember when it comes time to replace clutch and brake friction materials on your machines . . .

By far the majority of earth-moving machine manufacturers choose Johns-Manville Industrial Friction Materials. That's not surprising, actually J-M Friction Products have set records for long service and low-cost operation. They are *engineered* for the job—specially formulated for trouble-free performance and maximum working life.

And Johns-Manville's rigid manufacturing and inspection controls provide real insurance of uniformly high quality.

If you want to be sure that your own equipment will continue to give the excellent service built into it—take a tip from the machine maker. Replace only with genuine Johns-Manville Friction Materials.

Write for your copy of *"Johns-Manville Industrial Friction Materials"* FM-12A. It contains a wealth of important application and performance data. Address: Johns-Manville, Box 60, New York 16, New York.

JM

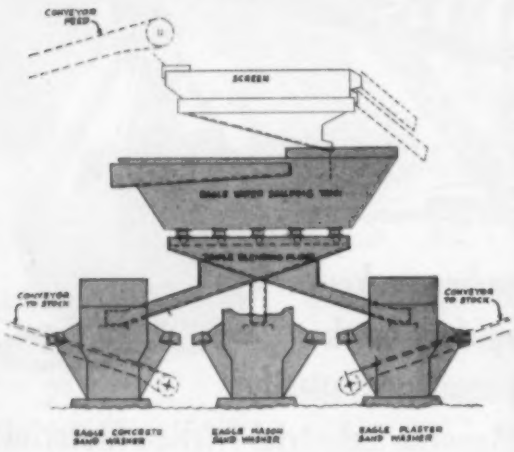
**Johns-Manville**

**INDUSTRIAL FRICTION MATERIALS**

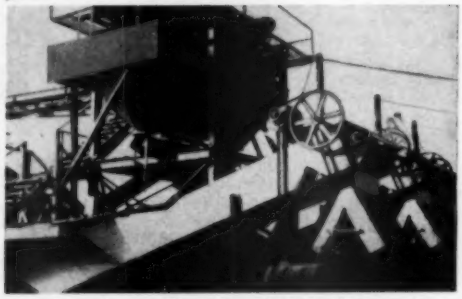
No. 1 With Leading Manufacturers

# There's an Eagle Washing & Class

No two sand and gravel plants are identical—deposits and methods vary—but, the demand for clean, classified sand is universal. Regardless of your deposit and methods, Eagle equipment can improve your product. Typical applications are shown here—you will find many others in our Catalog 47, sent on request. Ask for a "Questionnaire"—answer the questions, return it and send us a sample from your deposit —Eagle Engineers will give you a report and make recommendations.




## Special Sand Processing With Blending Flumes.



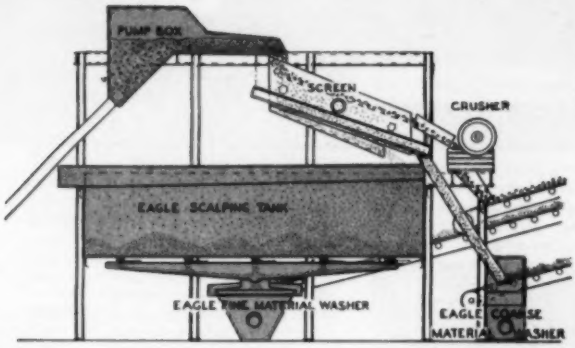
Through use of rotational deflecting spouts and divided dual or triple blending flumes the classified sand from the Eagle Water Scalping Tank can be proportioned or blended — the desired ratio of meshes going to each of two or three Eagle Fine Material Screw Units for washing, further classifying and dehydrating. "System" shown above produces concrete sand, mason sand and plaster sand—each with ideal ratio of meshes.

"System" at left has triple blending flume—classified material from two Eagle Water Scalping Tanks is blended as desired — three blends — each chuted to a separate Eagle Double Screw Fine Material Washer-Classifier-Dehydrator. Unit at left produces mason sand, unit in center produces No. 1 torpedo sand, unit at right No. 2 torpedo. Single screw unit with section of paddles, in right foreground, handles the minus 3/8" — plus 3/16" material. Extra abrading action provided by the paddles gets rid of clay.

This "System", a complete self-contained plant, affords flexibility for changing conditions and changes in demand for a particular product.

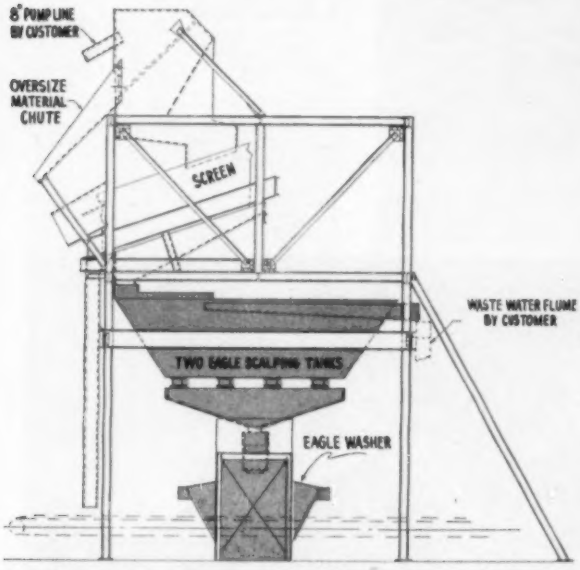
## Eagle's years of experience, many installations

# ifying "System" for Every Plant!

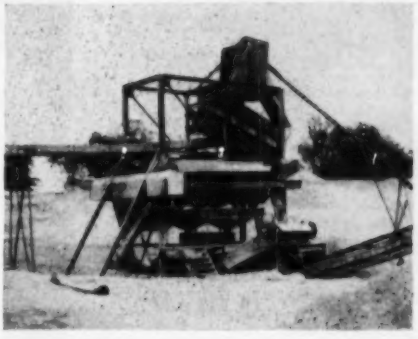



## "System" for 3 Gradations.

"System" shown below employs Eagle Water Scalping Tank and two Fine Material Screw Units to produce two gradations of classified sand and an Eagle Coarse Material Screw Unit to produce coarse sand — resulting materials, with gravel produced, assure aggregates to meet exacting specifications.




## Field Scalping & Dewatering "System"



In high capacity pumping operations a "system" consisting of Eagle Water Scalping Tanks; gathering flumes and double screw fine material units are used advantageously to remove excess water with minimum loss of fines. Gravel is by-passed to conveyor. Concentrated material is then conveyed to additional Scalpers-Screw Washers "System" (not illustrated), for final grading, re-washing, classifying and dehydrating. Concrete sand, mason sand and plaster sand is produced.

# and Broad Line can help you!

EAGLE IRON WORKS

LEADERS IN AGGREGATE WASHING AND CLASSIFYING EQUIPMENT FOR HALF A CENTURY

133 HOLCOMB AVE • DES MOINES, IOWA

# new machinery and supplies

PIT AND QUARRY

### • 6-Ton Truck Crane

A heavy-duty truck-mounted crane of six tons capacity or ⅜ cu. yd. has been placed in production by the Schield Bantam Company, Waverly, Ia.

The new machine, "Model T-35", has a complete line of attachments including shovel, clamshell, dragline, back hoe, magnet, grapple, and pile driver. Improvements over previous models include a stronger main frame, larger shafts and bearings, bigger diameter center pin, and new design of trunnion base and rollers.

Clutch and braking surface have been increased with faster, easier action. The

cab has increased visibility including a door on top for observing crane work. Safety glass is standard.

Other features are anti-friction bearings, machine-cut gears, internal expanding band type clutches, external contracting brakes and jackshaft mounted tagline for either tagline or power-operated shovel dipper trip use. The new model can be mounted on any tandem axle truck of 164 in. wheelbase or longer, or the machine may be mounted on pedestals, barges, trailers, etc., for special applications.

### • No-Pushbeam Bulldozer

A larger size "no pushbeam" bulldozer has been developed by the Baker Manufacturing Company, Springfield, Ill. This model, the "15X", is designed for use with Allis-Chalmers HD-15 tractor.

The 15-X 'dozer is designed to mount integrally on the tractor without the use of a pushbeam. The bulldozer is supported by twin hydraulic cylinders which control the depth of cut from 15½ in. below the surface of the ground to 39½ in. above. The moldboard is 96 in. wide and 51 in. high with an 8 in. cutting edge. The greater height of the blade

makes possible the moving of the same yardage of material as a standard blade but the width is that of a standard highway trailer so that the machine may be moved over highways at any time without special permits.

The close mounting and rigid fastening of the 'dozer to the tractor exerts more of the tractor weight and power into positive down pressure for faster operation and quicker blade response. The hydraulic system is front-mounted behind a protective radiator cover. The entire unit has been designed for ease of handling and servicing.

### • Screen Cloth

A line of screen cloth for hard usage is being marketed by the Hoyt Wire Cloth Company, P.O. Box 22, Lancaster, Pa.

The screens are made in two grades of wire — "Supertough Abrasco" using an oil tempered steel wire, and "Abrasco" which is a hard drawn steel wire. Four styles of weave are available, smooth top, longslot, oblong space, and double crimp. Six types of edge finishing are standard for the line.

### • Front Dump Shovel

A Front Dump Shovel for use in mines and places with low headroom or where large rocks and boulders are encountered has been developed by the "Quick-Way" Truck Shovel Company, Denver, Colo.

The Front Dump Shovel is a full revolving, modified model "L" powered by a diesel engine, and mounted on a diesel powered M-52 Half-Track. Exhaust scrubbers are used in underground operation.

The shovel has ⅝ cu. yd. capacity and is cable controlled. The crowd is positive and automatic and operates through racks and pinions on the twin dipper sticks. While developed especially for underground work, the attachment can be mounted on any standard Model "L" machine for quarry and excavating use.

## ● Crane Carriers

Cook Bros. Equipment Company, 1815 N. Broadway, Los Angeles 31, Calif., is manufacturing a line of crane carriers in all capacities from 5 ton to 20 ton capacity.

Some of the features of these carriers are: hinged operator's cab, hinged engine hood, pedestal mounted instrument panel,

sealed beam guarded lights, diamond plate fenders, welded steel frame, and optional outriggers.

These carriers can be powered by either diesel or gasoline engine in a choice of makes and models. They will handle any make of crane, shovel, dragline, and trench hoe.

## ● Dust Mask

A plastic lightweight mask with a cotton gauze filter is announced by General Scientific Equipment Company, 2700 Huntington Street, Philadelphia 32, Pa.

The mask is designed for dusts of a non-toxic nature and for protecting from chips, and similar nuisance conditions.

## ● 4-Wheel Drive Loader

A front end loader that features four-wheel drive and four-wheel steering has been brought out by Mixermobile Manufacturers, 8027 N.E. Killingsworth street, Portland, Ore.

There are two models, the "LD5" with 1 cu. yd. capacity and the "LD10" with 2 cu. yd. capacity. Both models are constructed of two power axle assemblies that are hinged together in the center of the machine with an oscillating center-pin coupling. This coupling allows an oscillating twist to the axles and retains full power on all wheels in any degree of turn. Planetary gearing is used to transmit power from the engine to the wheels. There are eight speeds in either direction.

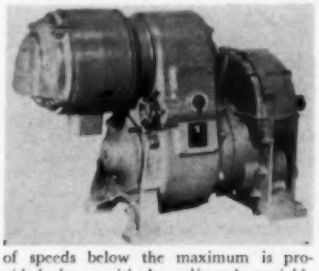
The bucket is hydraulically operated and has good "break-out" action for

faster loading. The discharge height is 8½ ft. in the smaller model and 9 ft. in the larger. Pneumatic tires are used to give flexibility and to permit highway travel.

## ● Variable Speed Drive

A heavy-duty double reduction variable speed drive is being offered by Sterling Electric Motors, 5401 Anaheim-Telegraph Road, Los Angeles 22, Calif.

The new drive is made in 20 and 25 hp. with speed variation of 2:1, 3:1, and 4:1. The 20 hp. model, "364 KFEB", is available with maximum speeds ranging from 176 r.p.m. to 42 r.p.m., and the 25 hp., "365KFEB", with speeds from 176 r.p.m. to 64 r.p.m. An infinite range

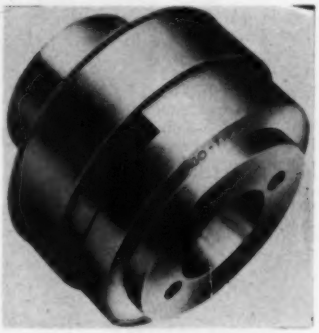


of speeds below the maximum is provided by positively adjusted variable pitch pulleys. The heavy-duty electric motor is self-contained in each unit and may be either of drip-proof, or totally enclosed, fan cooled design. These two models are part of the "Speed-Trol" line of drives made by the company.

## ● Short Flexible Coupling

A flexible coupling that has been shortened to save space and cost has been brought out by the Lovejoy Flexible Coupling Company, 5047 W. Lake Street, Chicago 44, Ill.

The coupling is a standard "Type C" flywheel design with one hub removed. In place of the hub three holes are

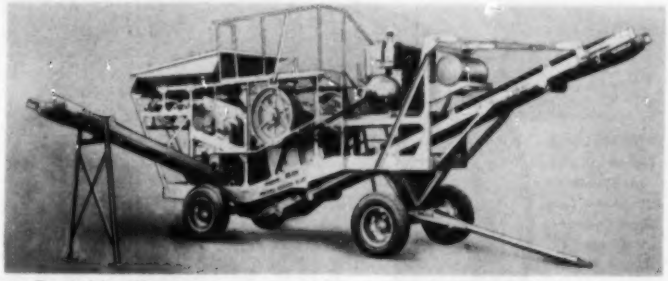


tapped through the flange to provide for connection with the flywheel. This saves the space occupied by a hub and literally moves the coupling into the flywheel.

## ● Steam Hose

A steam hose that combines wire braids and glass cords has been introduced by Quaker Rubber Corporation, Division of H. K. Porter Company, Tacony and Comly Streets, Philadelphia 24, Pa.

Designed for steam cleaning and other types of steam work, the hose, called "Ironsides Steam Hose", has double strength construction. The inner braids are wire to give high burst resistance and the outer braid of glass cord gives additional strength as well as insulation. Tube and cover are of heavy gauge "Ebonite" heat resistant compound. The hose is flexible and kinkproof and is designed for pressures up to 200 p.s.i. in sizes from ½ to 1¼ in. in diameter.



## ● Portable Plant

A single pass portable plant for use where mobility is a major consideration has been brought out by the Diamond Iron Works, 1748 N. Second Street, Minneapolis 11, Minn.

The "100 Series" plant features a low hopper height, hinged delivery conveyor, short wheelbase, guarded drives, and easy accessibility for maintenance.

The plant consists of a heavy duty grizzly, a single eccentric plate feeder, a 1½ deck oversize vibrating screen, and a roller bearing jaw crusher. There are three sizes in the series with capacities from 30 to 70 tons per hour.

Other features are choice of brakes, centrally located controls, optional sand rejector conveyor, front and rear dual tires, and a gasoline or a diesel power plant. The entire plant is constructed so that it can be readily transported.

"Measured by the ton mile, Hercules Red-Strand preformed outlasts others about two to one," reports one operations manager. Another operator testifies, "Our records show Red-Strand is considerably out in front of four other ropes."

**Why HERCULES Red-Strand excels**

What's the reason for such performance and praise? In simple terms, it's because *higher-than-rated quality* in Red-Strand preformed delivers *longer-than-expected service.*

If you're not completely satisfied with *your* wire rope service, try Red-Strand preformed. You'll experience the difference too.

HERCULES® Red-Strand wire rope made by A. Leschen & Sons Rope Company, St. Louis 12, Missouri

*In business only to make wire rope ... better wire rope ... since 1857*

HIGHER-THAN-RATED QUALITY

LESCHEN
WIRE ROPE
AND SLINGS

A. LESCHEN & SONS ROPE COMPANY

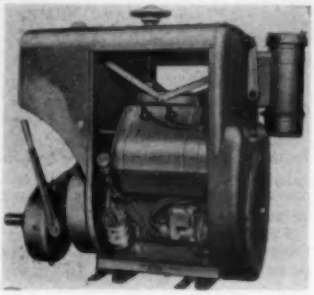
DISTRIBUTORS IN ALL PRINCIPAL CITIES

### • Air-Cooled 36 Hp. Engine

A 4-cycle, 4-cylinder, V-type engine, the model "VG4D," has been announced by the Wisconsin Motor Corporation, Milwaukee, Wisc.

This air-cooled engine develops a peak of 36 hp. at 2200 r.p.m. It is designed for applications from 25 to 36 hp., and features light weight and compactness for ease of installation.

Some of the features are: tapered roller main bearings; dynamically balanced

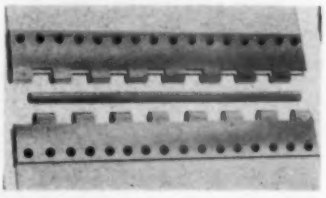


forged crankshaft; Stellite-faced exhaust valves; valve seat inserts; and honed cylinders. Cooling is obtained from a large fan cast into the flywheel which forces air across and around the cylinders and heads.

### • Belt Splicer

A belt splicer for trough type belt has been announced by the Tennefos Manufacturing Company, Moorhead, Minn.

The splicer is made in any desired width and will fit all of the various trough type rollers. It is installed by one



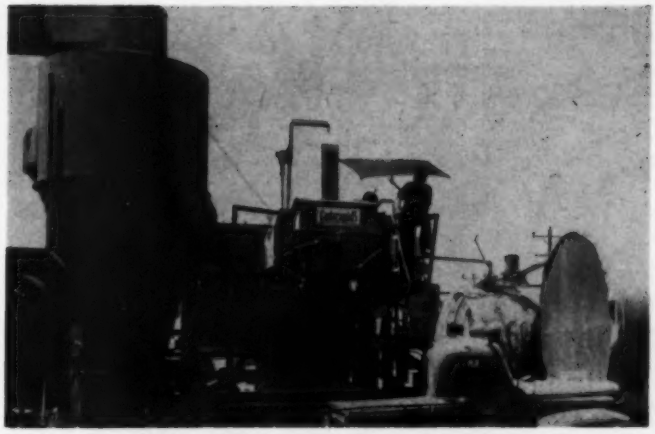
man and is said to increase belt life. The coupling is easily installed and uncoupled when necessary for machinery overhauling.

In addition to splicers for troughed belts the company also manufactures types for flat belts.

### • Hard-Facing Alloy Rod

A hard-facing rod for high temperature applications has been announced by Coast Metals, Inc., Little Ferry, N. J.

The new alloy, "CM-119", is able to resist abrasion at temperatures encountered in hot rolling steel and smiliar applications. It can be applied with any good arc welding process and has easy welding characteristics that assure efficient bonding. It will weld over itself and more ferrous materials without cracking, checking, or porosity, and so permits patching to be done. It is claimed the long service life resulting from use of this alloy makes initial hard-facing and rebuilding quite economical.



## ● Bituminous Mixing Plant

A new volumetric-type bituminous mixing plant has been announced by the Iowa Manufacturing Company, Cedar Rapids, Ia.

The Master Plant consists of two units, the "Model MM" mixing unit and the "Model MGC" gradation control unit. These are combined into a complete plant to meet rigid specifications for uniform bituminous mixes.

The mixing unit is available with either a single or twin shaft pugmill. Both models have the highest volume below the center line of the shaft for better mixing with less power. A positive displacement bitumen pump is adjustable and synchronized with an apron feeder to maintain correct proportions.

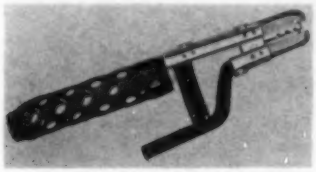
Interlicked controls stop the machine in case of interruption of flow of materials. Pugmill, piping, pump and discharge box are jacketed for heating, and the plant is completely enclosed to minimize dust and to reduce heat loss.

The Gradation Control Unit can be replaced by a transfer elevator and feeder unit or by a bulkhead type aggregate feeder if either a single aggregate hot or a cold mix is desired. Cedarapids driers are designed to operate with the Master Mixer plant.

## ● Electrode Holder

A 400 ampere insulated electrode holder, the "Cooltong", has been brought out by the Lincoln Electric Company, Cleveland, Ohio.

The holder has a nose that is made up of layers of laminated, glass impregnated, plastic cloth surrounding the cop-



per core. The jaws are made of a tough, non-spattering metal, and will handle rods from 1/8 in. to 5/16 in. in size. Current carrying parts of the holder are pure copper reinforced with steel for rigidity. The handle is perforated for ventilation and to reduce heating from induced currents in a-c welding.

## ● Alloy Steel Trailer

An alloy steel trailer that combines light weight with high strength has been added to the line of trailers built by the Martin Machine Company, Kewanee, Ill.

The new trailer, the "R4TL", weighs less than 8,000 lb. but has a carrying capacity of 27 tons. The frame is welded to keep weight at a minimum. The platform is 8 by 13 ft. and the overall length from kingpin to rear is 27 ft. 7 in. The trailer also has the Martin Tandem Axle

Assembly which is full oscillating assembly mounted on Neoprene for silent operation with no moving parts.

## ● Portable Air Compressor

A 75 c.f.m. portable air compressor has been announced by the O.K. Clutch and Machinery Company, Columbia, Pa.

The "Hornet 75" is designed for production or standby service It is easily handled by one man and can be towed

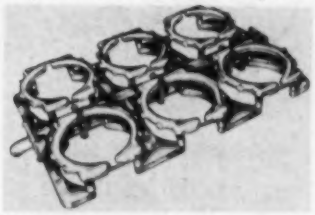
behind a passenger car for mobile service. The compressor uses a 6-cylinder Chrysler engine which has been rebuilt so that three cylinders are used for power and three for air compression. It is mounted on a three-wheel trailer.

The compressor will handle a 45-lb. paving breaker or rock drill, or any two smaller air tools.

## ● Improved Blow Ring

An improved blow ring for the Aeroturn dust collectors has been designed by the Turner and Haws Engineering Company, 87 Gardner Street, Boston, Mass.

The new design uses cast aluminum carriers for the blow rings and effects a weight reduction of more than 50 percent



in the assembly. The blow rings are held to the carrier by flexible rubber tubes which supply the air and permit the rings to adjust more closely to the surface of the filter bags. The carrier is mounted so that it can float laterally to follow the vertical alignment of the bags. The size of the motor and power requirements are lessened by use of the aluminum carrier.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**PROTECTIVE MASKS**

PLACE HEAD-BAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

Weigh less than ½ ounce. Excellent Protection against non-toxic dusts except free silica. Replaceable cotton pads are inexpensive and sanitary.
Martindale Protective Masks ..... $.30 ea.
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Masks packed individually. Refills packed 25 to envelope. No. 2 (heavyweight) Refills contain twice as much filtering cotton as No. 1.

**DISCOUNTS**

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$100.00 and over ..... 20%
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***Send for new 64-page Catalog No. 29 of Maintenance, Production and Safety Equipment.***

**MARTINDALE ELECTRIC CO.**
1363 Hird Ave. Cleveland 7, Ohio

The most economical air-entraining agent on the market!
NET WEIGHT 80 LBS.
ERTRANE-C
NOPCO CHEMICAL COMPANY
overcomes the disadvantages of conventional additives!

Nopco Ertrane* C has been specifically formulated to afford the cement producer an outstanding air-entraining agent that not only *saves time and labor,* but assures high quality air-entraining portland cement.

**It is only necessary to add Ertrane C to water and stir. The agent dissolves quickly and completely.**

**No additional chemicals are required at any time.**

**Feed systems remain clean when Ertrane C is used — no time lost purging.**

Profit by putting Nopco Ertrane C to work for you. Informative booklet and full information are available upon request.

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# NOPCO

**CHEMICAL COMPANY Harrison, N. J.**

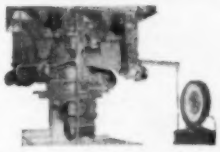
*Branches: Boston • Chicago • Cedartown, Ga. • Richmond, Calif.*

**Multiple Batch Mixes By Remote Control**

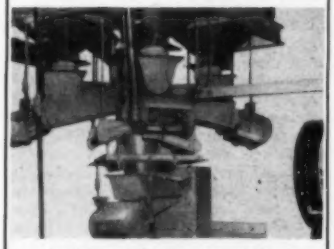
**with**

SYNTRON

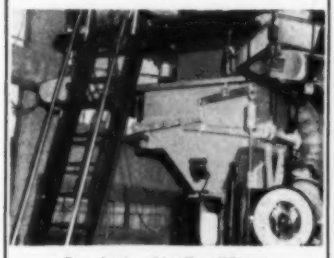
**BATCH WEIGH PLANTS**



***Scale Controlled Operation***



Blending and feeding two chemical ingredients into weigh hopper.



Four feeders blending different materials in one operation.

Syntron Batch Weigh Plants speed up bulk handling of many materials in batch mixing operations. Remote push button control insures accurate measuring . . . eliminates guesswork . . . weighs and feeds desired proportions. Completely automatic, scale controlled supply hoppers with instantaneous cut-off. Write for Free Catalogue Data.

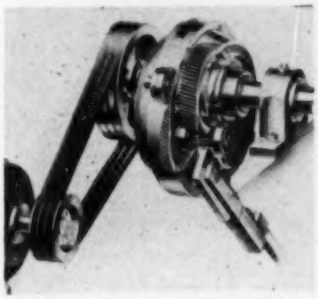
**SYNTRON CO.**

385 Carson Ave. Homer City, Pa.


### • Speed Reducer

A new series of shaft-mounted speed reducers has been announced by the American Pulley Company, 4200 Wissahickon avenue, Philadelphia 29, Pa.

The "Shaft-King" series of 20 to 1 ratio speed-reduction units features improvements in gears, bearings, housing, lubrication, and oil seals. The gears are precision-cut from alloy steel, flame-hardened.



They comprise two trains of single-helical type. Bearings are ball and tapered roller types, held in a three-wall housing. Lubrication is a splash system from the gears running through an oil reservoir.

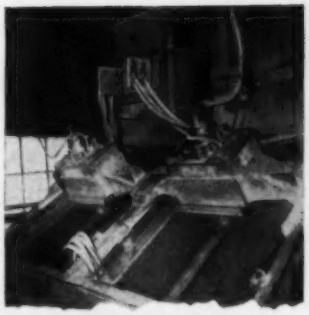
These reducers can be equipped with a torque-arm overload release for preventing damage due to shock loads or jams.

### • Rayon Fabric Belt

A rubber transmission belt made with all rayon fabric is being marketed by the B. F. Goodrich Company, Akron, Ohio.

The new belt, "Drivesall", is the result of more than five years of laboratory and field work. It is said to be 25 percent stronger than cotton carcass belts of the same number of plies and to withstand up to ten times more flexing. The belt also has the advantage of having 50 percent less stretch than comparable cotton fabric belts.

The strength of the belt is due to the continuous filaments of rayon as compared to the short fibres of cotton. The rayon fabric is thinner and so flexs more easily over small diameter pulleys. A six-ply Drivesall belt is only as thick as a conventional four-ply cotton fabric belt. The Drivesall is suggested for use on medium duty applications with fans, blowers, air compressors, pumps, crushers, mills and other machinery.



**FASTER SCREENING**

**lower processing costs**

For a few cents an hour, the Hanco Electric Screen Heater heats woven wire screens to

- speed screening of moist materials
- prevent blinding
- make it easier to meet specifications for fines
- eliminate cleaning labor
- eliminate screen wear due to cleaning abuse and extra weight of clogged screens.

Quick-Change Attachment for easy screen changes

- Distribution bars make direct contact with cloth eliminating current loss suffered when skirtboard is part of circuit . . . weak or broken circuits due to rusting.
- Distribution bars and insulations shielded from abrasion.

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*Engineers*
*• Since 1926 •*
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**CANTON 7, OHIO**

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THE PIONEER
ELECTRIC SCREEN HEATER

# trade notes

Promotion of five officers of Nopco Chemical Company, Harrison, New Jersey, has been announced. Dr. C. I. Post, elected vice-president, will be responsible for all research, sales and advertising for the Vitamin Division. Dr. E. A. Robinson, elected vice-president, will be responsible for all sales of the Textile Fibers and Textile Specialties Departments and will be Technical Director of Industrial Laboratories.

Three new assistant vice-presidents named are Harry A. Batley, George G. Stier, and Walter B. Morehouse.


ONE MAN CONTROL

DIGGING • HAULING

AUTOMATIC DUMPING

The gravel operation at right is one of three modern plants at different sites, producing about 500,000 tons of concrete aggregate annually for a large Ohio firm, and all depending solely on Sauerman Rapid-Shifting Scraper Machines to dig and move their material.
The machine in the picture uses a 3-cu. yd. Sauerman Crescent bucket operating on a 550-ft. span. It has dug a sizable pit down to the water level and will extend the pit in two directions, besides continuing under water to the full depth of the deposit.

SAUERMAN EARTHMOVERS

Labor saving efficiency . . . low initial cost . . . rugged digging and hauling power . . . all-around versatility . . . and moderate power requirements . . . are distinct advantages that have made Sauerman Earthmoving Machines famous for over forty years. Sauerman Machines spot and dump automatically under the easy control of an operator situated in a comfortable cab overlooking the work area.

Slackline bucket lifts and conveys its load.

Drag Scraper Excavator: Combines digging power, hauling speed and long reach for efficient pit or hill excavation, reclamation and handling of materials, wet or dry.

Slackline Cableway Excavator: Unequalled for operations that require deep digging, especially under water, and delivery to a high point. Reaches hundreds of feet into ponds, wet pits, sludge basins and similar areas, while operator remains in a safe spot.

Mobile Tower Excavator: Self-propelled drag scraper machine, affording great digging capacity, long reach and exceptional mobility. Ideally suited to stripping operations, pit excavation, re-handling mine waste and for stockpiling.

Crescent scraper curved design promotes easier digging, faster haulage.

Scrapers on Boom Machines: Sauerman Crescent Scraper buckets are invaluable as auxiliary digging equipment for boom machines. Use of a Crescent bottomless bucket in place of a conventional dragline bucket increases the capacity of a boom machine on work where material has to be moved but not lifted. The boom machine-Crescent Bucket combination is widely used for scraping gravel to a ground hopper.

*Tell us about your interests.*
*We will send catalogs you need.*

SAUERMAN BROS., Inc. 534 S. CLINTON ST. CHICAGO 7, ILL.


The Albemarle Paper Manufacturing Company has announced the opening of its new mill at Roanoke Rapids, N. Car. This has greatly increased the facilities of its completely integrated operation for the manufacture of Multiwall Bags.

A new Beloit Paper Machine is rolling out 250 tons of Kraft paper daily. Only a few hours by truck from its printing and Multiwall manufacturing machines in Richmond, the new mill assures an ample supply of Kraft for the company's Multiwall business.

Latest development in a modernization program that started in 1946, this new Fourdrinier machine, installed at a cost of $5 million, is capable of turning out 270 tons of Kraft paper daily at maximum capacity. At present 250 tons of Kraft for Multiwall Bag manuafcture and for wrapping and converting Kraft are being produced each day from this new equipment.

The Cincinnati Rubber Company, Cincinnati 12, Ohio, is constructing a new office building. The building will be 66 by 80 ft., two stories high and will be air-conditioned, with insulated and acoustically tiled ceilings.

Three additions to the engineering staff of the Carboloy Department of General Electric Company in Detroit have been announced. Dr. Robert F. Stoops has joined the advance development section. He was formerly a research engineer with the Harbison Walker Refractories Company, Pittsburgh. Anthony D. Cortese has joined the design and application section. He will specialize in magnetic applications. Mr. Cortese was formerly a member of the General Electric Company's test engineering program in Schenectady. Frank B. Nuelle has been transferred to the Detroit plant from the Schenectady operation. He will be in the administrative engineering section.

Jay DeEulis, former engineering editor of Steel, has joined the Carboloy Department of General Electric Company, Detroit, as technical editor of the news bureau. He was associated with Penton Publishing Co., Cleveland, O., for 15 years.

The following appointments were announced recently by the Cross Engineering Company, Carbondale, Pa.: Robert G. Johnston was made manager of aggregate screen sales; G. W. Tench was named assistant to the president; and George H. Day becomes district sales representative in Northeastern Pennsylvania, Southern tier of New York, and the Northern tier of New Jersey.

Stuart H. Fulkerson, secretary-treasurer of Cross Engineering Company, Carbondale, Pa., has returned from a trip to Europe where he attended the Machine Tool and Machinery International Exhibits in London, Glasgow, and Hanover.

Election of Wentworth Smith as director and vice president in charge of sales, Neptune Meter Company, was announced. Mr. Smith fills the vacancy left by the recent retirement of Rex J. Van Gorder after 33 years with Neptune.

Expansion of distribution is being undertaken by O.K. Clutch & Machinery Co., Columbia, Pa., which was recently purchased by Howard J. Sparler and Daniel J. Sparler of York, Pa.

Charles H. Druschel continues in charge of sales and manufacture as vice president of the company. Howard J. Sparler is president and Daniel J. Sparler, treasurer.

At a meeting of the Board of Directors of Chicago Pneumatic Tool Company December 2, Guy J. Coffey, vice president, was elected president to succeed the late W. L. Lewis.

H. A. Jackson, chairman of the board, has been acting president, will continue as chairman and chief executive officer.

J. R. Alexander

The appointment of J. R. Alexander as general sales manager, Quaker Rubber Corporation, Division of H. K. Porter Company, Inc., Philadelphia, has been announced.

Mr. Alexander will be in charge of the company's sales activities. He came to Quaker as a sales representative and has been successively city sales manager and district sales manager, until his present promotion. He was also instrumental in establishing the Detroit Sales Office and Warehouse of which he became District Manager.

Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, announces the appointment of W. M. Huston as manager of engineering of Lima shovels, cranes, and crushers for the Lima Division. He was formerly chief engineer of shovels and cranes.

E. G. Halby succeeds Mr. Huston as chief engineer of shovels and cranes and the administrative head of the department.

The American Pulley Company, Philadelphia, Pa., announced the following appointments: Henry H. Hamilton, formerly advertising manager, to assistant manager, Materials Handling Division. Joseph C. Salette, Jr., formerly district manager of the St. Louis office, to sales promotion and advertising manager. George L. Michel to district manager of the St. Louis office. Samuel S. Stuart to district manager of the Philadelphia territory. John J. McFarland to district manager of the Minneapolis office.

Charles H. Currier, 66, chairman of the board of Kewanee-Ross Corporation, died suddenly on December 22 in Buffalo, N. Y.

Mr. Currier became chairman of Kewanee-Ross Corporation when Ross Heater & Mfg. Co., Inc., of which he was president, was recently joined with Kewanee-Boiler Corporation. The new firm was a subsidiary of American Radiator & Standard Sanitary Corporation.


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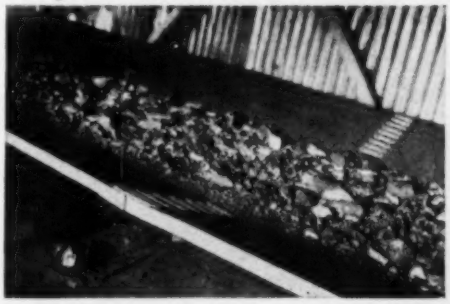
BELT FASTENERS and RIP PLATES



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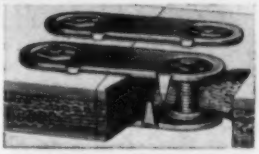
★ Trough naturally, operate smoothly through take-up pulleys.
★ Distribute pull or tension uniformly.
★ Made of Steel, Monel, Stainless, Everdur. Also Promal top plates.
★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



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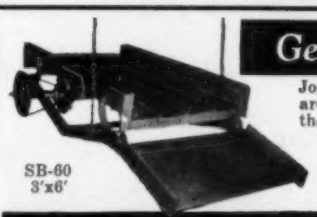

SB-60 3'x6'

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Join construction men everywhere who are finding KOLMAN's new Series "C" the best buy in vibrating screens. With any of KOLMAN's single or multi-deck screens you actually get greater volume at less operating expense!

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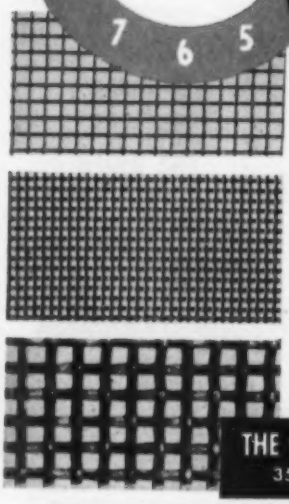
# AROUND THE CLOCK
## EVERYDAY—WITHOUT SHUTDOWNS
# CLEVELAND WIRE SCREENS



Everyday—around the clock... less down time... increased tonnage... greater production can be yours when you install longer life "Cleveland" Wire Screens. Tough—yet ductile, produced by craftsmen, "Cleveland" wire screen sections maintain rigid accuracy of openings, have fewer wire breaks, prove greater resistance to abrasion, corrosion and fatigue. Mail us your requirements—our specialists will make recommendations at once.

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**Always a leader in its field, Sprague and Henwood, Inc. has been working for a number of years on the development of new types of Diamond Bits, to supplement their well-known "TRUCAST" bits, which are still unsurpassed for many diamond drilling requirements.**

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### DRILLING MACHINES
**and Accessory Equipment**

**To get the full benefit of our new diamond bits you need drilling machines with plenty of power and a wide range of both speed and feed. Model 40-C is our latest-model core-drilling machine and can be relied upon for best possible all-round results on holes up to 1000 feet in depth. Other modern machines provide for very deep core-drilling and for either core-drilling or blast-hole drilling underground. We also manufacture a complete line of improved accessory equipment. Illustrated bulletins containing detailed information mailed promptly.**

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**We do drilling by contract and are one of the oldest and largest contractors for any type of core drilling. Experienced crews are available at all times for service anywhere in the world. Estimates submitted promptly on request.**

## SPRAGUE & HENWOOD, Inc. Scranton 2, Pa.

*See our four-page insert in the Mining Catalog*

H. C. Allington

H. C. Allington has been elected vice president in charge of sales of the Eastern Division of The Colorado Fuel and Iron Corporation by the Board of Directors, it was announced. His headquarters will be in New York City.

Mr. Allington will supervise sales in the Eastern Division of all products manufactured by Colorado Fuel and Iron and its subsidiaries, including the recently acquired John A. Roebling's Sons Corporation.

Mr. Allington has been general manager of sales of the Wickwire Spencer Steel Division of Colorado Fuel and Iron since 1947.

Three members of the Carboloy Department of General Electric Company here have received G.E.'s highest award for outstanding employee achievement.

Charles A. Coffin awards were made to: Otto K. Hittenberger, general foreman; Ernest A. Hughes, supervisor—electrical maintenance; and Perry D. Weiser, application engineer. A fourth, Francis W. Pierson, methods equipment specialist, received honorable mention.

Mr. Hittenberger's award was for his contribution in the field of diamond wheels in carbide grinding. Mr. Weiser was cited for his application of cemented carbides to percussive drilling bits, and Mr. Hughes was singled out for his work with high temperature refractory furnaces used in sintering carbides.

Andrew M. Kennedy, Jr., E. S. Goodwin and J. S. Jacox have been appointed assistant general managers of purchasing for Westinghouse Electric Corporation.

The assistant general managers will exercise staff supervision over assigned division purchasing activity and supervise company-wide negotiations involving certain commodities.

St. Regis Paper Company announced the appointment of Howard C. Peterson, Jr., as district manager of the Southwestern Sales District of the company's Multiwall Bag Division. He succeeds H. S. Rhodes, who has been appointed general manager of the Field Engineering Department. Mr. Rhodes succeeds H. S. Hangen, who has been named assistant general manager of the Engineering and Machine Division.

Link-Belt Company has announced the appointment of Hubert J. McCormick as sales manager of the Caldwell plant of Link-Belt Company, 2410 W. 18th Street, Chicago, succeeding Erwin A. Wendell, currently on leave.

In his new position, Mr. McCormick will supervise the sale of Caldwell plant products, which include overhead conveyor systems, screw conveyors, bulk material handling systems, icing equipment, power transmission, and car haul equipment.

The Construction Machinery Division of Chain Belt Company has announced four changes involving sales personnel:

Parker "Red" Eddy was appointed district sales manager of the Los Angeles Office. John Heinrich was appointed district sales manager for the Kansas City Office. Roy L. Peck, who has had over 25 years' service in the construction industry, has joined the Construction Machinery Division as a truck mixer specialist; and Frank Peddar, who has been with the Rex Construction Machinery Division for over a quarter of a century in manufacturing and field service, is appointed special sales engineer for Rex De-Watering Pumps.

Arkell & Smiths has announced the appointments of W. M. Sloane as sales manager of the newly created Mid-Western Sales Division with headquarters at 205 W. Wacker Drive, Chicago, Ill., and of John K. McIntyre as sales representative in the Western Division. He will work out of the Kansas City office.

Frederick G. Huxster has been named manager of chemical operations for the Explosives Department, Hercules Powder Company, Wilmington, Del., it was announced. He will succeed J. Leroy Bennett who will retire early next year. Pending his retirement, Mr. Bennett will act in a consulting capacity.

J. C. Pangborn, Jr.

John C. Pangborn, Jr., son of 1st vice-president John C. Pangborn, has been appointed Hagerstown District Sales Manager by the Pangborn Corporation, Hagerstown, Md.

The Hagerstown sales district was recently formed and consists of counties in central Pennsylvania, most of West Virginia with bordering counties in Ohio and Kentucky and the western section of Maryland.

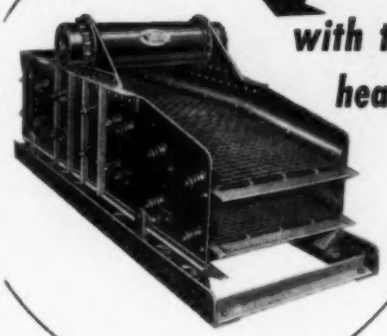
Gilfry Ward has been appointed president and Joseph L. Mullin first vice president of the American Manganese Steel Division of American Brake Shoe Company, it was announced recently.

Mr. Ward joined the Amsco Division of the company upon graduation from Yale University in 1928. He transferred to the Sales Department and in 1937 was appointed a district sales manager. In 1938 Mr. Ward was made vice president and in 1948 was placed in charge of sales for the Division.

Mr. Mullin was formerly vice president in charge of operations of the Amsco Division. He joined the company as a clerk in 1914, and held various jobs in the Operating Department. In 1928 he was appointed general superintendent of foundries for the Amsco Division. In 1945 he became vice president in charge of operations for the Division.


MORE PRODUCTION . . . BETTER SAND

with the NEW DEISTER heavy-duty type UHS



Herbert Sand Company of Milltown, New Jersey, installed one of the first new triple deck 4' x 12' Deister, type UHS, Heavy-Duty Scalping Screens. The screen is producing up to 120 tons of sand and gravel per hour in five sizes in a wet operation—using 2,000 gallons of water per minute. With the new Deister UHS, production has increased substantially and sand quality is better than ever before . . . with a greater percentage of grits for a stronger sand demanded in this highly competitive area.

Mr. Herbert says "The vibrating mechanism is mounted high enough to stay dry during a rugged, wet operation such as ours . . . away from wear and abrasion."

An analysis of your own operation may prove the new Deister UHS will step up your production . . . and quality . . . and *profits*. Write for Bulletin 54 . . . and a data sheet . . . today.

**Here's why users like it!**

**1. Life-time unitized vibrating mechanism** . . . a precision-built, jig-assembled unit. Two bearing construction. Runs in bath of oil. Renewable sleeves and bearings.

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**3. Divided screening sections** . . . identical in size, may be readily interchanged or shifted to distribute normal wear and prolong life of screening medium. Different size openings may be used with each section, allowing up to 3 sizes on each deck.

**4. Sizes** . . . 3', 4' and 5' widths; 10', 12' and 14' long and in single, double and triple deck models.

DEISTER SCREENS

DEISTER MACHINE COMPANY

FORT WAYNE 4, INDIANA

# legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

## Unusual Law Suits

A few days ago I received an unusual but interesting letter from a reader, as follows: "For many years I have consistently read your legal writings in PIT AND QUARRY. During these years I accumulated enough valuable legal information from reading your legal reports to be able to run my sand-and-gravel business with minimum chances of financial losses from suits, and also by giving my lawyer your higher court citations he was able to win a law suit which I know without your citations we may not have won. During these years of reading your legal articles I have often thought about asking you to write an article based on unusual or out-of-the-ordinary decisions. If and when you have the inclination and time, I suggest that you write for us a legal article based on 'unusual' law suits."

It is true that the outcome of many higher court law suits are unusually interesting and informative to buyers, sellers, and producers of nonmetallics.

## Uncertain Contract

An unusual legal situation arises when a seller or a contractor signs a contract to perform work for a definite sum not knowing the exact amount, quality, or material he will be required to furnish. Ordinarily one would believe that such a contract is void for uncertainty. However, a leading higher court held that the contractor or seller is obligated to perform the work, and furnish the proper materials necessary to complete the contract.

For example, in *New England General Contracting Company v. Brennan Stone Co.*, 175 Atl. 921, the testimony showed facts as follows: A general contractor made a contract with a property owner for the construction of a building. The contract specified that the work was to be done in accordance with the specifications and plans furnished by the property owner. The specifications with reference to the stonework provided that cutting and setting drawings should be submitted by the sub-contractor to the supervising architect and that no stone should be cut until such drawings were approved. The general contractor signed a contract with a sub-contractor, the Brennan Stone Company, which contained a clause to the effect that the stone company would furnish and deliver granite to the building site for the sum of $5,000. This work is to be according to the plans and specifications.

The stone company submitted drawings showing the size and position of the stones it intended to furnish and lay. These drawings were not approved by the supervising architect, who stated that certain corrections must be made to conform with the changed design of the buildings. Then the stone company notified the general contractor that the changes suggested by the architect would result in additional expense to the amount of $750. The general contractor submitted the matter to the property owner, who refused to agree to pay the stone company this extra compensation. The stone company then notified the general contractor that it would not perform the contract. The general contractor then made a contract with another sub-contractor under which the stone was furnished and laid at a cost of $6,325.

The general contractor filed suit against the stone company to recover

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WEIGHING
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Weighed by the . . .
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Installed at any point on a belt conveying system, the Transportometer makes any conveyor an automatic, continuous weighing and totalizing station. The Transportometer employs a completely mechanical, gear differential integrator which automatically and continuously records on a direct-reading tonnage totalizer, the product of belt speed and the momentary weight on the suspended idlers.
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Let us show you how the Transportometer can improve your processes by accurate weighing, via conveyors, in the handling, storing and supplying of raw, intermediate and finished products.
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damages amounting to the difference between $5,000, the contract price of the contract signed by the stone company, and $6,325, which the general contractor was compelled to pay to another subcontractor for furnishing and laying the stone work.

The stone company's counsel argued that it was not liable because the plans submitted by the general contractor were drawn to a small inaccurate scale which did not accurately indicate the size of the stone to be used at the corners of the building and for window jambs and other locations. In other words, the counsel for the stone company contended that the contract was void for inaccuracies and uncertainties.

Nevertheless, the higher court held the stone company liable in damages to the general contractor, and said:

"The situation is not one where the defendant (stone company) submitted drawings which correspond with the specifications and plans of the government, but one where, not knowing precisely what would be required, it made its drawings in the hope that they would be approved. The provision in the specification requiring the submission of such drawings and providing that no stone should be cut until they were approved by the supervising architect, gave to him the right to refuse to approve the plans submitted, certainly so long as he required nothing creating a substantial departure from the design of the building as planned. . . . The changes made in the drawings by the architect were in accord with the general design of the building, and he had the right to refuse to approve them unless they were changed in the manner he specified."

Hence, in this case the stone company was held liable because it signed an uncertain contract. The court held that because the contract was uncertain, the property owner and general contractor could compel the stone company, the sub-contractor, to furnish and lay stone wherever the architect decided it was needed, even if he changed the design of the building after the stone company had signed the contract to perform the work for $5,000.

### Cannot Ratify

Ordinarily the average layman believes that if a city official purchases materials which the city utilizes, and from which it benefits, the city is required by law to pay the supplier for the materials. However, this is not so at all, according to a leading higher court decision.

For example, in *Whitton v. City*, 28 S. W. (2d) 119, a usual state law gave the councils of various municipalities the authority to purchase material for these municipalities.

One day a salesman visited the city officials for the purpose of selling certain materials. The city council was not in session, and no meeting was called. However, the mayor of the city instructed two members of the council to purchase the materials for the city, and a written contract to this effect was signed. Later the city refused payment.

In subsequent litigation the seller ar-


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Cedarapids Schrock Built by IOWA

MOTORIZED HEAD PULLEYS

eliminate maintenance on chains, belts, sprockets, Universal drives, countershafts, etc.

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Find out all the advantages of converting your belt conveyor or belt-bucket elevator installations to *motorized* efficiency before you need head pulley replacements. See your distributor today, or write for Bulletin MP-1.

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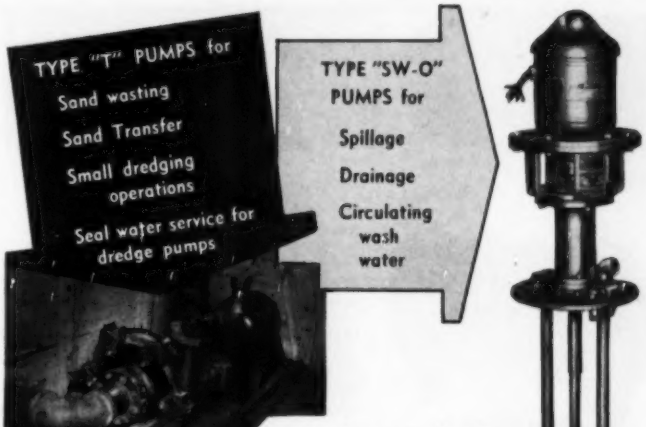


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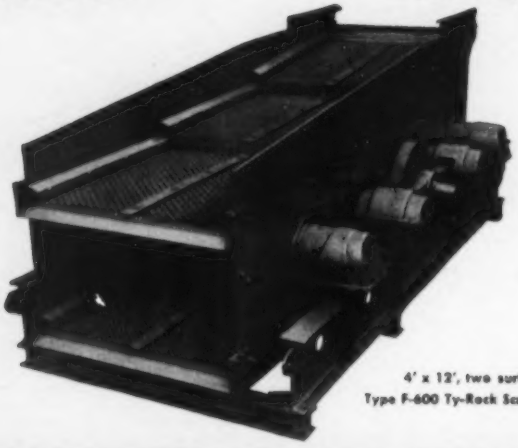

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Manufacturers of Woven Wire Screens and Screening Machinery

Cut Material Handling Cost

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Specify Super-Service
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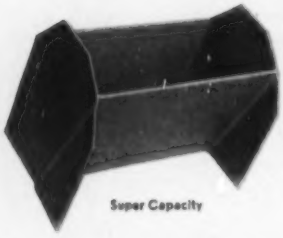

Super Capacity

STANDARD Steel Buckets "stand up like champions" in resisting abrasion and corrosion.

Rigidly built of top-grade steel. Reinforcing strip may be welded to bucket lip, and hard surface rod added to insure extra service life.

High-economy STANDARD Buckets are available in all styles, types, sizes, and gauges.

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gued that the city was liable for payment because its officials had signed a contract to purchase the materials, and the council afterward had ratified the contract, and had also utilized the materials. However, the court held the city not liable for payment, and said:

"In any event, the contract to purchase the materials was void when made because (it was) executed without authority, and, being void, could not be ratified, because there was nothing to ratify."

On the other hand, it is important to know that a valid contract is completed with authorized city officials, and the courts in various localities have held cities liable on written contracts of sales made by officials having proper authority, although the contracts had defects or mistakes, such as incorrect price, date, quantity, or quality of merchandise. These decisions are based on the rule of law that a municipality may ratify a contract not void absolutely by the law. However, a contract which for any reason is void when it is signed, cannot be ratified although the city uses and appropriates the merchandise or materials.

For comparison, see *B. S. & G. v. City of M.*, 159 So. 421 Here it was disclosed that a sand-and-gravel company entered into a contract with properly authorized city officials to deliver washed gravel at a named price per yard, 2,700 lb. per yard. At the beginning the gravel was measured on delivery by weight, 2,700 lb. constituting a yard. Because of the lack of weighing facilities and the deficiency in volume, it was agreed that the measurement should be by the cubic yard, and not by weight. The city's trucks were gauged and marked so that the measurement could easily be made.

A new administration was elected, and the new officers refused to pay the bill, because the contract called for 2,700 lb. of gravel at the stipulated price.

Although the agreement to measure the gravel had not been approved by proper and authorized city officials, the court held the city liable, and said:

"The contract is in writing and calls for a yard of 2,700 lb. . . . This city is asked to pay no more per pound than the contract calls for."

In this case the original contract was valid. Under the new agreement the city received the same quantity and quality of gravel for the same price specified in the original contract.

### Consent Not Enough

Frequently, the higher courts have held that if a property owner gives his *consent* to a contractor to make improvements for a leasee of the property, the contractor can have a valid lien on the real property to secure payment for the materials and labor. A leading higher court recently rendered a new and unusual decision that this is not so, unless a state law specifically so provides.

For example, in *Hawkins v. Faubel*, 31 S.W. (2d) 401, it was disclosed that under a lease contract an owner consented to the tenant or leasee making necessary improvements. The tenant

made a contract for improvements, but the property owner was not notified.

The tenant refused to pay for the materials, and the supplier filed a mechanic's lien. In holding the lien void the court said:

"We hold that the owner does not make his property subject to lien merely by consenting for the lessee to make improvements. . . . This view also accords where there is no statute making the owner liable who merely consents that the improvement shall be made."

### Control Is Important

Recently a higher court rendered a rather unusual decision to the effect that any person or company who controls or directs any employee how to perform work is liable for injuries or damages caused by negligence of such controlled employee.

For instance, in *B. & B. Material Co. v. Winston Bros. Co.*, 290 Pac. 839, the testimony showed facts as follows: A company hired from the owner of motor-trucks several vehicles with their drivers for the performance of certain work. A part of the work consisted of the removal of rock and other material on the banks and in the bed of a river. The trucks, on reaching a declivity, were turned and backed by their drivers to its edge; then the material was dumped over the edge. One day a truck accidentally was driven by its driver backward over the edge of the bank and was destroyed. The owner of the truck sued the company for its value. In holding the company liable the court said:

"The truck was as much under the direction and control of the appellant (company) while operating on the work as it would have been had the appellant (company) been privileged to employ its own driver. . . . Since we conclude that the driver of the truck was the servant of the appellant (company) and not the servant of the respondent (owner of truck) during the period the truck was actually used in the prosecution of the work, it follows . . . that the appellant (company) is liable for the loss of the truck even though it was lost because of the negligence of the driver."

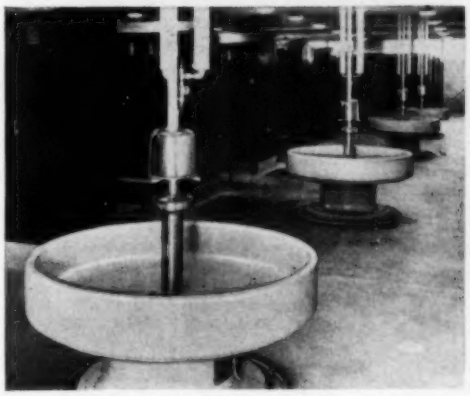
### Don't Switch Employees' Jobs

Numerous employers pay insurance premiums falsely believing that they have adequate protection under the State Workmen's Compensation Act. However, all occupations and businesses must be listed with the Industrial Commission; otherwise protection may not be afforded.

For illustration, in *M. v. M. S. & G. Co.*, 144 Pac. (2d) 558, it was shown that an employer was engaged in the sand-and-gravel business. He employed a hoist operator in a gravel pit who requested that he be transferred to run a tractor on a farm owned by the employer. The employee was fatally injured while operating the tractor, and his widow sued to recover compensation under the State Workmen's Compensation Law.

Since the employer's compensation policy did not specifically include protection under the occupation of farm work, the higher court refused to allow compensation.


# Are Your Wash-Up Facilities Still Adequate?



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Dixon, Ill.
Wampum, Pa.
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Buffington, Ind.
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**Concrete Products Co. of America**
Pittsburgh, Pa.
**Duquesne Slag Products Co.**
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**National Gypsum Co.**
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Brookhaven, Miss.
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Greenville, Miss.
Baltimore, Md.
**W. S. Dickey Clay Mfg. Co.**
Meridian, Miss.
**Elk River Concrete Products Co. of Montana**
Billings, Mont.
**Montana Phosphate Products Co.**
Garrison, Mont.
**Platte Valley Cement Tile Co.**
Fremont, Nebr.
**New England Brick Co.**
Gonic, N. H.
**Federal Crushed Stone Co.**
Buffalo, N. Y.
**Lehigh Portland Cement**
Buffalo, N. Y.
**Stone Mix Concrete Corp.**
Buffalo, N. Y.
**Arundel-Brooks Concrete Corp.**
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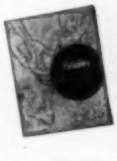

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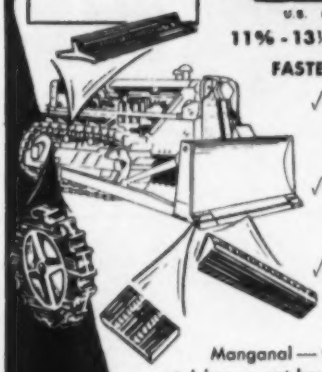
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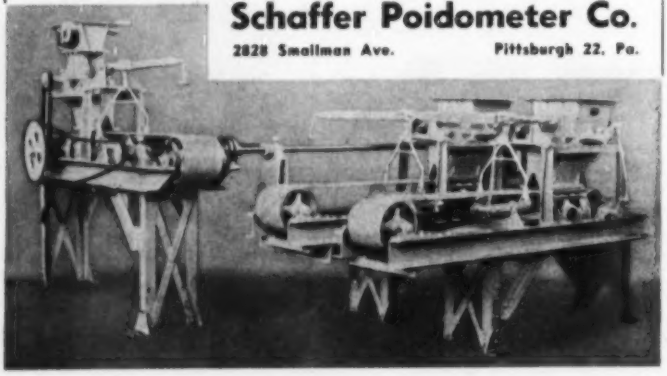


The importance of this higher court decision is as follows: had the employee been entitled to the benefits of the State Workmen's Compensation Law, the employer would have been immune from a suit for damages. However, under the circumstances the widow may sue and recover damages from the employer.

### Court Estimates Value

Generally speaking, a sale contract is rendered void and unenforceable if the price of the article, merchandise, or real estate is not clearly stipulated. However, a leading higher court, instead of deciding such a contract void, estimated the value of the real estate.

For illustration, in *Call v. McDaid*, 178 S. W. (2d) 221, it was shown that a property owner made a contract with one Call which provided that if the sand and gravel rights in the tract were sold by Call within one year, the property owner would receive $1,500; but if the sand and gravel rights were not sold, the tract was to be reconveyed to the property owner, but without specifying a price.

The higher court held that although the sand and gravel rights were not conveyed or sold by Call, yet the property owner could recover $2,500, which was the reasonable value of the property, although the contract did not state what the property owner was to receive in event Call did not sell the sand and gravel rights. The court said:

"The contract provided that if the sand and gravel rights in the 40 acre tract were sold in one year, the complainant (property owner) would accept $1,500 as part of the profits; but if not so sold, the 40-acre tract was to be reconveyed to him. The sand and gravel rights were not sold nor was the 40-acre tract reconveyed them. The evidence shows this tract to be worth $2,500."

### Intentions Of Parties

All persons who make contracts should remember this: if a contract is ambiguous, the intentions of the parties at the time the contract was signed defines the contract.

For example, in *Harjo Gravel Company v. Luke-Dick Company*, 153 Pac. (2d) 112, it was shown that a land owner and a gravel company signed a written contract which specified that in consideration of $400 the land owner does "hereby sell, and convey" to the gravel company all of the gravel deposits located on the land. Another clause stated that the gravel company shall have the right to enter upon the land for the purpose of removing gravel for a period of five years.

Later, litigations arose over the correct interpretation of the contract. The land owner contended that at the termination of five years the gravel company must vacate the premises. The counsel for the gravel company contended that for $400 the company had purchased all the gravel on the land and that it did not have to vacate the premises at the end of five years.

The lower court held that the contract gave the gravel company a lease to take gravel from the premises for only five

years and that it must vacate the premises at the end of five years. The higher court approved the verdict, saying:

"The limitation on the time within which the Harjo Gravel Company was given the right to remove the sand is inconsistent with the terms of the granting clause, and this inconsistency renders the contract ambiguous."

The higher court explained further that from the testimony given during the trial, the jury was justified in deciding that when the contract was signed the parties "intended" that the gravel company should have a lease for five years to remove the gravel from the land and that it was not purchasing the gravel on the land with the right to remove it for an indefinite period.

### Validity of Hauling Charges

Modern higher courts consistently hold that a truck owner may recover the rates established by the Public Service Commission, irrespective of a contract under which the trucker agrees to haul for lesser rates. See *White v. Welles*, 180 Fed. (2d) 101. Here a common carrier contracted to haul freight at less than the rates fixed by the Public Service Commission. After several years the carrier sued the shipper and recovered the difference between the rates paid by the shipper and the rates fixed by the P.S.C. However, according to a late higher court decision, this rule of law is *not* applicable if the carrier neglected to file a copy of the allowable rates with the secretary of state.

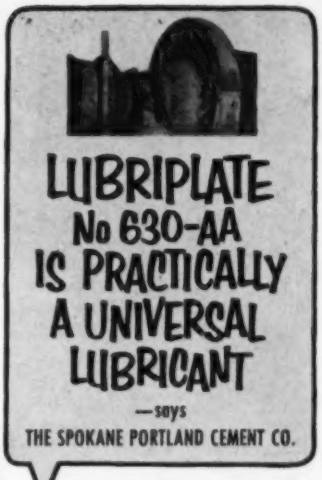
For example, in *Mogis v. L. R. Sand & Gravel Corporation*, 189 Fed. (2d) 130, the testimony showed facts as follows: The gravel corporation employed a truck owner named Mogis to haul sand, gravel, crushed stone, and other similar materials within the state. Mogis is authorized to operate over certain designated routes within the state. The rates to be charged for the transportation of the designated materials by motor carriers within the state are subject to and governed by the regulations of the Public Service Commission.

Further testimony showed that Mogis sued the gravel corporation for $138,000, together with costs of suit, including a reasonable attorney's fee. That figure represents the several alleged undercharges made by Mogis for hauling sand, gravel, etc., for a period of several years, for the gravel corporation.

The higher court refused to render a favorable verdict for Mogis because he had neglected to file with the secretary of state a certified copy of the freight rates allowed by the Public Service Commission. This court said:

"The rates and tariffs which a carrier may charge are no longer the subject of contract between such companies and their patrons, but are fixed by the rules and regulations of the commissioners."

Quite obviously the L. R. Sand & Gravel Corporation was *lucky* that Mogis had neglected to file a certified copy of the fixed rates with the secretary of state. Otherwise the gravel corporation could have lost the suit.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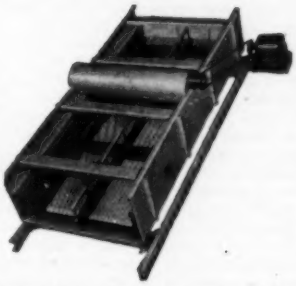

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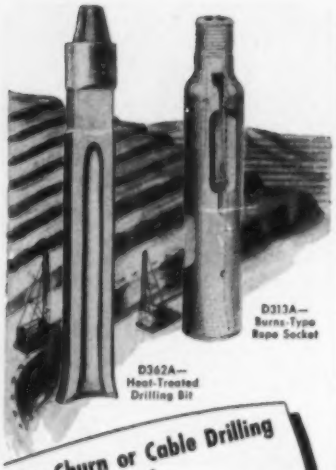


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# traffic news

## CENTRAL TERRITORY RAILROADS
### Freight Traffic Committee

**Docket 89297 (1)**—Proposed to establish on crushed stone, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Monon, Ind., to Galesburg, Mich. Open car equipment, 168 cents net ton, and closed equipment, 183 cents net ton.

**Docket 89305 (2)**—Proposed to establish on stone, fluxing, furnace or foundry melting or refractory, unburned, in bulk, in closed cars, carload, minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply from Woodville, Ohio, and other northwest Ohio Group 1 origins, to Detroit, Mich, 171 cents per gross ton. Applies in closed cars.

**Docket 89311 (1)**—Proposed to establish on crushed stone and crushed stone screenings, in open-top equipment, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply to Teays, Ohio, from Lawton, Ky., 177 cents per net ton; Olive Hill, Ky., 177 cents net ton; and Grahn, Ky., 171 cents per net ton.

**Docket 89313 (1)**—Proposed to establish on plaster and articles taking plaster rates and plasterboard, in straight or mixed carloads, minimum weight 40,000 lb., from Grand Rapids, Mich., to Teays, Ohio, plaster 34 cents and plasterboard 37 cents.

**Docket 89316 (2)**—Proposed to establish on crushed stone, in bulk in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Chicago, Ill., to Galesburg, Mich., 168 cents per net ton.

**Docket 89324 (1)**—Proposed to establish rates on crushed stone and crushed stone screenings, in open-top cars only, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Blanchard, Findlay, and Spore, Ohio, to destinations in Ohio. Rates as shown in exhibit below:

| | Rates in Cents per Net Ton From Following Ohio Points | | |
|---|---|---|---|
| To Following Ohio Points | Blanchard | Findlay | Spore |
| Waverly, Greggs, Givens, Robbins, Omega, Piketon, Van Meter, Sargents | 201 | 213 | 201 |
| Beaver, Wakefield, Wetmore | 201 | 213 | 213 |
| Teays, Stockdale | 201 | 213 | |
| Fosters | 201 | 201 | 201 |

**Docket 89347 (2)**—Proposed to establish on limestone, natural, ground or pulverized, minimum carload weight 60,000 lb., from Greencastle, Ind., to Henderson, Ky., open cars, 262 cents net ton; closed cars, 311 cents net ton.

## GENERAL FREIGHT TRAFFIC COMMITTEE
### Eastern Railroads

**Docket G-7214** (Carrier)—Proposed to establish on crushed stone and crushed stone screenings, in open-top equipment, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubicle or visible capacity, actual weight will apply to Teays, Ohio, from Lawton and Olive Hill, Ky., $1.77 per net ton; Grahn, Ky., $1.71 per net ton, subject to ExParte 175-B increase.

**Bulletin G-7235** (Shipper)—Proposed to establish on limestone, natural, ground or pulverized, unburned, carload minimum weight 30 tons, from Gibsonburg, Ohio, and other Northwestern Ohio Group 1 origins to Springfield, Ky., $4.08 in closed cars; $3.g9 in open-top cars. Rates per net ton, subject to ExParte 175-B increase.

**Bulletin G-7237** (Shipper)—Proposed to establish on limestone, natural, ground or pulverized, unburned, carload minimum weight 30 tons, from Marble Cliff, Ohio, to the following points:

| | Rates per Net Ton Closed Cars | Open-Top Cars |
|---|---|---|
| Garnette, W. Va. | $3.48 | $2.98 |
| David, Ky. | $3.36 | $2.86 |

Rates subject to ExParte 175-B increase.

**Bulletin G-7251**—Proposed to establish on limestone, ground or pulverized, in bulk, carloads, in open-top equipment, minimum weight 90 percent of marked capacity of car, except that when car is loaded to cubical or visible capacity, actual weight will apply from Buffalo, N. Y., to Addison and Corning, N. Y., $1.87 per net ton, subject to ExParte 175-B increase, to be issued to meet motor truck competition and to expire with February 28, 1954.

**Bulletin G-7266** (Shipper)—Proposed to establish on stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply from Marble Cliff, Ohio, to Huntington, W. Va., $1.76 per gross ton, subject to ExParte 175-B.

**Bulletin G-7276** (Shipper)—Proposed to establish on calcium or lime, silicate, of carload minimum weight 20 tons, from Akron and Barberton, Ohio, to Havelock, Nebr., 87 cents per hundredweight; Topeka, Kans., 83 cents per hundredweight, subject to ExParte 175 increase.

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**ILLINOIS FREIGHT ASSOCIATION**

**Docket IRC 511-1223**—Proposed to establish on stone, crushed, ground or pulvertized, carload, in closed equipment, minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 30 tons, from Ocoya, Ill., to Chicago, Ill., 171 cents per net ton. Subject to X-175-B.

**Docket ORMV 511-162**—Agricultural limestone, also ground limestone dust and limestone, ground, carload minimum weight 90 percent of marked capacity of car except that when cars are loaded to full capacity, actual weight, but not less than 30 tons, will apply from Valmeyer, Ill., to stations in Kentucky and Tennessee (representative points shown below):

| Present Combination rates | Rates in Cents per Net Ton Proposed |
|---|---|
| Auburn, Ky. | $3.60 |
| Bowling Green, Ky.; Columbia and Hartsville, Tenn. | $3.71 |
| Cerulean and Hopkinsville, Ky. | $3.38 |
| Corydon, Ky. | $3.49 |
| Irvington, Ky., and Pulaski, Tenn. | $3.82 |
| Lancaster and Paris, Ky.; Knoxville, Tenn. | $4.15 |
| Springfield, Ky. | $4.04 |
| Sturgis, Ky. | $3.44 |
| Chattanooga, Tenn. | $3.93 |
| Venore, Tenn. | $4.26 |

Above rates subject to X-175-B increase.

**Docket IRC 511-1224**—Proposed to establish on crushed stone, carload, as described in Item 240 of Central Territory Railroads freight tariff 197-T, ICC 4480, in bulk, in open-top cars only, minimum weight per car 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Thornton, Ill., to Indiana destinations on the NYC (W) shown below:

| | Proposed | Present |
|---|---|---|
| Ade and Schneider | 109* | 142* |
| Free, Handy, Sheff, Sloan, and Stewart | 117 | 150 |

All rates subject to X-175-B increase.

*Applies only for single and two line hauls.

**NORTH PACIFIC COAST FREIGHT BUREAU**

**Docket X NC 2289** Supplement 1—Proposed to establish on limestone, carload, Limestone Junction, Wash., to Bellingham, Wash., Item 7180-A, North Pacific Coast Freight Bureau 1-N, 70 cents per ton, 2,000 lb., minimum 50 tons, not subject to X-175.

**Docket NC-3007 (S)**—Proposed to establish on limestone, carload, Laurier, Wash., to Seattle, Wash., 19 cents per hundredweight, minimum 50 tons.

**NORTH PACIFIC COAST FREIGHT BUREAU AND PACIFIC SOUTHCOAST FREIGHT BUREAU**

**Docket X JT 2364 (S)**—Proposed to establish on stone, crushed, carload, Chewelah, Wash., to San Francisco and Los Angeles, Calif., 50 cents, minimum 30 tons.

**Docket X JT-2357 (S)**—Proposed to establish on gypsum products, carload, Sigurd, Utah, to Tacoma, Wash., minimum 40 tons, on plaster, 46 cents; plasterboard, 48 cents; gypsum, ground, in closed cars, 33 cents; in open cars, 31 cents.


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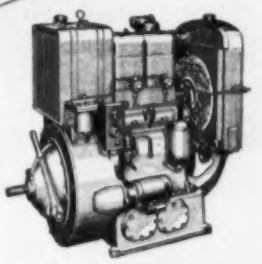

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## WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

**Docket A 12811**—Proposed to establish on limestone, ground or pulverized, in closed cars, carload 40 tons, except that when loaded to full cubical or visible capacity, actual weight will apply, Brownson, Ala., to Tamms, Ill., 386 cents per net ton, not subject to X-162-6-8 increase.

**Docket A 12812 (c)**—Proposed to establish on limestone, ground or pulverized, in bags, in box cars, carload 30 tons, Tate, Ga., to Galax, Va., 444 cents per net ton, not subject to X-162-6-8.

**Docket A 12931 (c)**—Proposed to establish on limestone, ground or pulverized, in closed cars, carload 40 tons, except that when loaded to full cubical or visible capacity, actual weight will govern, from Russellville, Ala., to Tamms, Ill., 353 cents per net ton, not subject to X-162-6-8 increases.

**Docket A 12940 (c)**—Proposed to establish a rate of 517 cents per net ton on limestone, ground or pulverized, in bags, in box cars, carload 30 tons, Russellville, Ala., to Galax, Va., not subject to X-162-6-8 increases.

### SOUTHWESTERN FREIGHT BUREAU

**Docket 62900 (S)**—Proposed to establish on sand, silica, gravel, Muscatine, Iowa, to Southwest; also Kansas. Amend item 1595-C, Southwestern Lines tariff 162-T, by adding Muscatine, Iowa, as point of origin subject to note as follows: Rates authorized herein on silica sand will also apply on gravel, carlaod.

**Docket 62901 (S)**—Proposed to establish rate of $3.81 per ton on silica sand, Santa Anna, Tex., to West Lake Charles, La.; also Lake Charles, La., $3.81 per net ton, not subject to X-162, 166, 168. Minimum weight authorized in item 180-C Southwestern Lines tariff 162-T.

**Docket 63004 (S)**—Establish rate of 50 cents on stone from Elberton, Ga., to Kansas City, Mo., not subject to X-162, 66-68. Minimum weight 50 tons.

### FREIGHT TRAFFIC COMMITTEE
**Trunk Line Territory Railroads**

**Docket TL M 2579** (Shipper)—Proposed to establish on crushed stone and stone screenings, carload minimum weight 90 percent of marked capacity of car from Botts, Pa., to stations on P.R.R. Index 7619, from Armstrong, Del., to 7976-Kiptopeke, Va., and on Baltimore and Eastern R.R. Index 10, from West Ocean City, Md., to 320-Denton, Md., the same rates as now in effect from Thomasville, Pa., as shown in Western Maryland Railway tariff ICC 8971, subject to Ex Parte 175-B increase.

### WESTERN TRUNK LINE COMMITTEE

**Docket E-41-1698 (S)**—Proposed to establish on limestone, crushed or ground, carload, from Edson, Kans., to

Denver, Colo. . . . . $2.39 per net ton
Salt Lake City, Utah . . $6.50 per net ton

Subject to X-175 increase.
Minimum weight 90 percent of marked capacity of car, but not less than 54,000 lb. Size of car ordered will govern, but orders for cars less than 60,000-lb. capacity will not be accepted.


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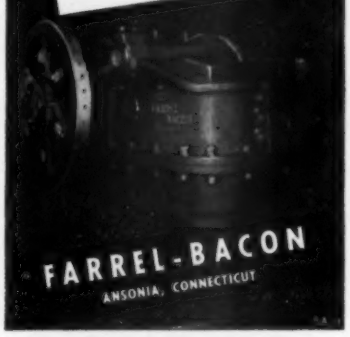

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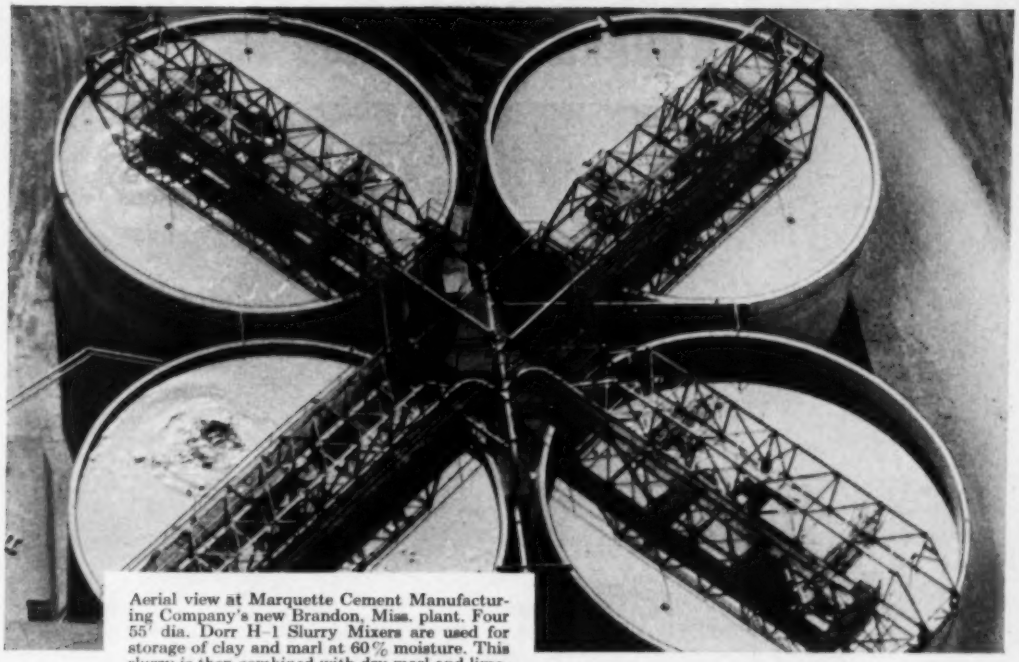
The Merrick Weightometer accurately and automatically weighs and records a continuous flow of material passing over the conveyor belt without any interruption to the conveyor operation.

Write us today for full details.

**MERRICK SCALE MFG. CO.**
180 Autumn St. Passaic, N. J.



Aerial view at Marquette Cement Manufacturing Company's new Brandon, Miss. plant. Four 55′ dia. Dorr H-1 Slurry Mixers are used for storage of clay and marl at 60% moisture. This slurry is then combined with dry marl and limestone to produce a kiln feed at 45% moisture which is stored in two similar units.

# *for your* **BIG** *cement slurry storage job...*

**You can't beat the Dorr Type H Slurry Mixer...** today's best answer to the problem of large volume kiln feed storage for wet-process cement production.

First, it is powered by the Type H drive from which it takes its name . . . a rugged power-package incorporating balanced spur gears and extra-heavy duty construction.

Second, it utilizes a center shaft mechanism with the drive head supported by a truss spanning the tank. Requires no center pier and foundation . . . saves concrete and reinforcing steel . . . greatly simplifies the construction of deep tanks for cement slurry mixing. In short . . . saves dollars for you.

Add to these features the thoroughly proven mixing control effected through the rake and air lift principle of the Dorr Slurry Mixer. The result is the best possible slurry storage unit in the 45′ to 70′ dia. range . . . at a reasonable installed cost. For more detailed information write to The Dorr Company, Stamford, Conn., or in Canada, The Dorr Company, 80 Richmond Street, West, Toronto 1.

*Better tools TODAY to meet tomorrow's demand*

DORRCO

DORR

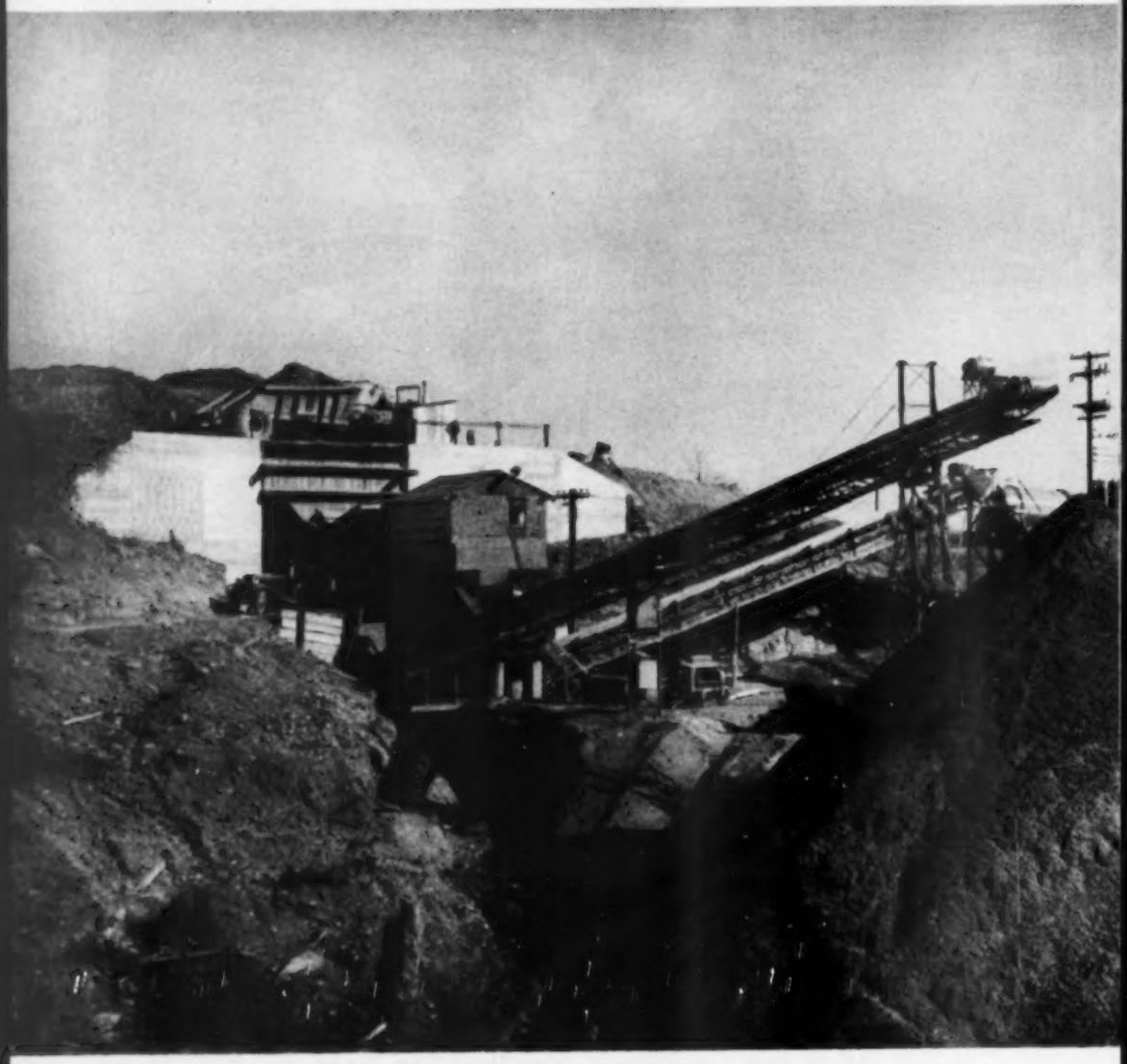
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Offices, Associated Companies or Representatives in principal cities of the world.

***When your operating margin is narrow...***

# that Pioneer Edge



# Pioneer

*Continuflo* EQUIPMENT

# makes profit more certain

## Evans picks Pioneer equipment for new Texas mine

● Stanley Evans, veteran dirt mover and road builder, is now mining limonite. East of Linden, Texas, in the north basin of the East Texas Field, Evans has built a remarkably efficient operation. Output quickly rose to 150 tons per hour . . . and is expected to increase.

In designing his beneficiation plant, Evans relied almost exclusively on PIONEER equipment. From his experience in the construction business, he knew about the PIONEER EDGE . . . the extra capacity, stamina, and operating efficiency built into all PIONEER equipment.

He knew too, that up on Minnesota's famous Mesabi range, he could find more PIONEER feeders, jaw crushers, and complete washing plants, than all other makes combined.

So his decision was easy . . . and today, like so many other mine operators who have the PIONEER EDGE on their side, Evans is producing *extra* tons at surprisingly low cost.

### These Pioneer Units Keep Costs Low for Evans

Beneficiation plant at the S. E. Evans Construction Company mine (shown above) was designed by George Hawkins, Evans production manager. It includes the following Pioneer units.

- 5' x 12' MESABI VIBRATING SCREEN
- 30" x 42" JAW CRUSHER
- 3 4' x 12' 3-DECK VIBRATING SCREENS
- 4' x 8' VIBRATING SCREEN
- 72" x 16' SCRUBBER
- 40" x 22" TRIPLE ROLL CRUSHER
- MISCELLANEOUS CONVEYORS AND HOPPERS

**PIONEER ENGINEERING WORKS**
1515 Central Avenue • Minneapolis 13, Minnesota
(SUBSIDIARY OF POOR & COMPANY • CHICAGO)

● Please send me information on the equipment checked.

| | | |
|---|---|---|
| ☐ JAW CRUSHERS | ☐ WASHING PLANTS | ☐ MECHANICAL FEEDERS |
| ☐ ROLL CRUSHERS | ☐ BITUMINOUS PLANTS | ☐ VIBRATING SCREENS |
| ☐ ROCK PLANTS | ☐ APRON FEEDERS | ☐ BUZZER SCREENS (LIGHT DUTY) |
| ☐ GRAVEL PLANTS | ☐ ORO FEEDERS | ☐ CONTINUFLO CONVEYORS |

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

# 16 YEARS OF *PROOF* OF *LORAIN* QUALITY at the VALLEY DOLOMITE QUARRY

**These three photos were taken on the same day . . . picture proof that Lorains "deliver the goods" over many profitable years!*

The setting for this story is in the Bonne Terre, Missouri, quarry of Valley Dolomite Corp. It began 16 years ago — way back in 1937 . . . and the story is still going on. Study these three pictures. Note the dates each Lorain was purchased. The first Lorain sold the second . . . and the second sold the third. Best of all, the two veteran Lorains are still going strong. That's why Valley Dolomite made it Lorain again . . . a big, new 2-yard Lorain, Model 820-J, purchased in 1951.

In quarry after quarry, you will find repeat Lorain owners like this one. You'll find them because Lorains have what it takes to slug it out with the roughest rock and keep on going year after year. You will find repeat owners because Lorains offer the world's greatest selection of sizes, mountings and front-end types to fit every need that comes along. It's a Lorain shovel-crane story that will pay you quarry profits . . . check that story with your local Thew-Lorain Distributor for your very next need.

THE THEW SHOVEL CO.
LORAIN, OHIO

The 2-yard Lorain shovel (at right), Model 820-J, purchased by Valley Dolomite in 1951, produces 2000 tons each 8-hour shift—ample proof of profitable performance!

QUARRY MEN PREFER THE NAME . . .

THEW LORAIN

# New Sinclair Grease for Heavy Duty Equipment

## Tests prove New Grease Gives better Lubrication... Longer Life to Bearings

A new Sinclair grease with superior lubricating qualities for bearings of heavy duty equipment is now available. Sinclair HEAVY DUTY BEARING GREASE is specially compounded to *stay put* in heavily loaded, slow speed rotating or sliding bearings.

New Sinclair HEAVY DUTY BEARING GREASE has an exceptionally high load-carrying capacity... greater resistance to pounding and shock loads... greater resistance to melting out. Operators of power shovels, draglines, tipples, conveyors and all other heavy duty equipment are assured of longer bearing life... higher productivity... lower operating costs.

Sinclair HEAVY DUTY BEARING GREASE is available in three grades – "0," "1," and "2." It is easily applied with a hand gun or air gun. It comes in 35 pound pails and 100 and 400 pound drums.

A Sinclair Lubrication Engineer can give you expert counsel on how you can get the most out of Sinclair's new HEAVY DUTY BEARING GREASE. Phone your local Sinclair Representative or write to Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

**SINCLAIR HEAVY DUTY BEARING GREASE**

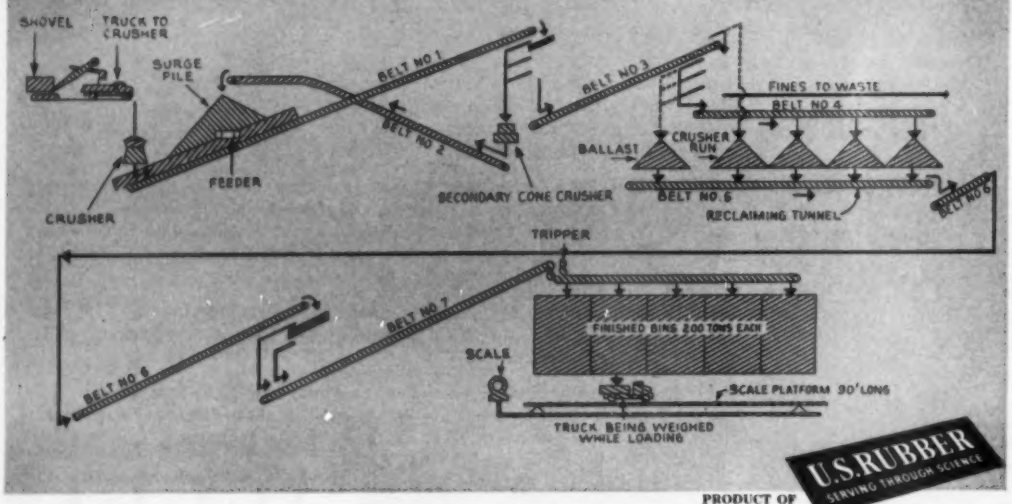
# Why did this new crushed stone plant select U. S. Rubber belting?

WHY? Because U. S. Rubber's Matchless Style XN and YN Conveyor Belts with patented Nylon construction give more strength and safety—with no increase in cost. The designers of this new plant wanted to get the greatest output at the most economical cost. They picked "U.S." for all the belts in the plant, totaling over 4440 ft. Their engineers worked as a team with the engineers of the equipment manufacturer and the engineers of United States Rubber Company—a "3-Way Engineering" system which invariably brings lower conveying costs. For any materials handling problem, get in touch with "U.S." specialists at address below.

**U. S. Matchless® Style YN** conveyor belt carrying crushed limestone rock from primary crusher to the vibrating screens.

**U. S. Matchless Style XN** conveyor belt carrying secondary crushed oversized material to surge pile.

**Flow of materials** through the crushed stone plant.




PRODUCT OF U.S.RUBBER SERVING THROUGH SCIENCE

**UNITED STATES RUBBER COMPANY**

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

# WEAR-ARC hard-facing alloys correct it!

**WEAR-ARC WH** • Build-up alloy for manganese and high carbon steel parts subjected to severe impact, abrasion, and compression.

**WEAR-ARC 12** • Hard-facing alloy for overlays providing exceptional wear resistance under heavy impact and abrasion conditions, and deposits to bond with manganese steel.

Singly or in combination, one or more of the many **Wear-Arc** hard-facing alloy electrodes will handle every known rebuilding and hard-facing problem. Why experiment... why depend on the unknown, the untested? For every application where wear patterns must be corrected to resist impact, abrasion, compression, heat, and corrosion... insist on genuine **Wear-Arc** Electrodes, one of Alloy Rods Company's six famous brands!

**ALLOY RODS**
COMPANY
YORK, PENNSYLVANIA

*NO FINER ELECTRODES MADE... ANYWHERE*

**Manufacturers of Arcaloy stainless steel electrodes • Bronze-Arc phosphor bronze electrodes • Nickel-Arc and Nickel-Arc 60 electrodes for cast iron • Tool-Arc electrodes for tools and dies • Weld-Arc low hydrogen electrodes. Write for product Bulletins.**

**Wear-Arc 3 to build up carbon steel Wear-Arc 6 for heavy impact, abrasion, and compression... Wear-Arc 40 and Wear-Flame 40 for light impact and severe abrasion... Wear-Arc A and Wear-Flame A cobalt-chromium-tungsten type for light impact, wear resistance, heat, and corrosion ...Wear-Arc B and Wear-Flame B cobalt-chromium-tungsten type for heat, corrosion, and abrasion combined with impact Wear-Arc and Wear-Flame Tungsten Carbide the ultimate in abrasion resistance.**

AR-14.

EDUCATIONAL FILM • Alloy Rods full color and sound motion picture. "No Finer Electrodes Made . . . Anywhere," 16 mm., available without charge . . . see how electrodes are made . . . write Department M.

The rope won't suffer long. First the stretch, then the "bong" as it breaks. Tough on the rope—but it gives us vital information!

# Check and test . . . check and test

In the making of Bethlehem wire rope, quality control is a fundamental point. It is a factor as basic as proper design; it is the core, the heart, of our careful manufacturing methods.

Throughout this program of quality control, many different tests are employed, for no single test will suffice. The one shown here is an excellent example —one that is cruel to the rope but that yields vital facts.

Offhand, you wouldn't think that any machine could possibly break that big, stout Bethlehem rope. It is made of tremendously strong steel wires, and it will lift or support many tons. Yet the machine pictured can break the rope in a matter of seconds. Object: to establish the ultimate tensile strength of the rope.

This rigorous treatment is all part of our overall formula. From open hearth to finished rope, it's check and test, check and test. Nothing is left to chance. Because of this attention to detail, you can depend upon Bethlehem rope to do the job expected.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*

***When you think WIRE ROPE . . . think BETHLEHEM***

# the OLIVER Model "B" Crawler

## WITH WARE LOADER

Long considered the finest tractor-loader combination in its class, the Oliver-Ware Model "B" is now built for even greater performance. There are now 5 lower track wheels instead of 4, and the front idler wheel is considerably larger. This means you get more track on the ground, greater stability, more traction, easier handling all the way around. It means faster loading cycles, more work done per day, lower costs and more profits for you.

You still get the hydraulically-controlled Ware loader—designed and built exclusively for the Oliver Model "B" Crawler. 110° bucket rotation and 28° "tilt back" give you a full bucket every time. Bucket level is automatically maintained when lifting load, preventing wasteful spillage. You can control speed of discharge. And, even with the "tilt back" action, you still have a 32° (from vertical) dump angle . . . a control range no other loader can surpass.

For complete information on how the Oliver-Ware Model "B" tractor loader can cut costs for you, see or write your Oliver Industrial Distributor.

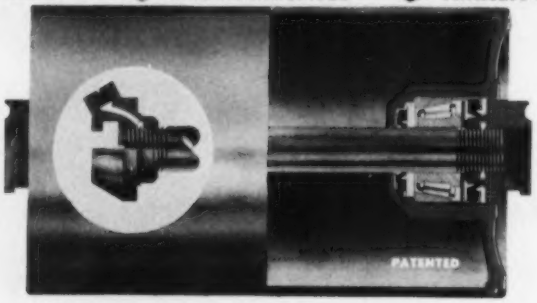
**THE OLIVER CORPORATION**

400 West Madison Street, Chicago 6, Illinois

A complete line of industrial wheel and crawler tractors

# You Need... CONTINENTAL'S NEW UST Idlers

CGC UNIT-SEALED CGC PRE-LUBRICATED CGC TIMKEN BEARINGS



*Saves Grease!*
*Saves Labor!*
*Saves Belts!*
*Long Life*—THE ULTIMATE IN MINIMUM MAINTENANCE

Continental's Unit-Sealed "UST" Conveyor Idlers, incorporating Timken Bearings, Garlock Klozures, are the answer to the operator's prayer.

The Unit Bearing Assemblies—"sealed unto themselves" provide an ample but not excessive grease reservoir. This represents a saving of grease and further eliminates any possible migration of the grease from upper to lower bearings on inclined rolls. The lubricant is a top quality water repellant grease of a stable consistency with a wide temperature range for long life.

Most important—this construction permits operating the Continental "UST" Idler for extended periods of time without relubrication for 1-2-3 years or longer depending upon the severity or character of conditions.

***For detailed information on these idlers write for Bulletin P.Q.-114***

CG—5210

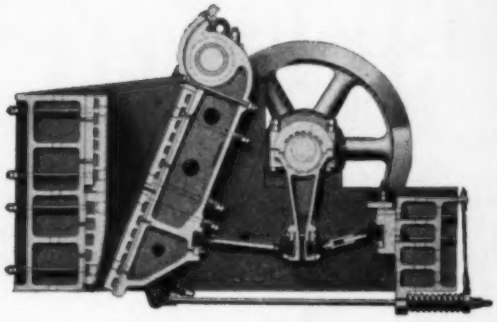
INDUSTRIAL DIVISION
**CONTINENTAL GIN COMPANY**
BIRMINGHAM, ALABAMA
ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS • NEW YORK CGC MANUFACTURERS

## DRY ROLLING TOGGLES ON A-C JAW CRUSHERS

# Last 4 to 6 Times as Long

## AS OLD TYPE JAW CRUSHER TOGGLES!

**ALLIS-CHALMERS**
**Jaw Crushers**



**FROM A ROCK AND SAND PLANT...**
Dry toggles installed 2½ years ago still going strong!

**FROM A CEMENT PLANT...**
After more than 2 years' operation, dry rolling toggles show relatively no wear!

**FROM A MINING COMPANY...**
New dry rolling toggles last 3 months, operating 24 hours a day. Old toggles lasted only 1 to 3 weeks!

**FROM A QUARRY OPERATOR...**
Dry rolling toggles installed 2½ years ago show very little wear.

**Users names on request.**

ACTUAL FIELD REPORTS show Allis-Chalmers dry rolling toggles (which are still in use) have already lasted *up to six times* as long as conventional toggles. No wonder crushing men are enthusiastic!

True rolling action of toggle ends and seats — instead of damaging sliding action — results in much less wear. Friction is eliminated — toggle ends operate cold even after a day's crushing.

Maintenance is less, too. No lubrication is required. Toggle ends operate dry. It's safer and cleaner around the crusher because there are no oil lines, no messy oil drip.

For more facts, get in touch with the Allis-Chalmers representative in your area, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

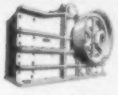
A-3824

# ALLIS-CHALMERS

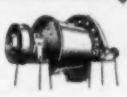
**Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.**

Hammermills

Vibrating Screens

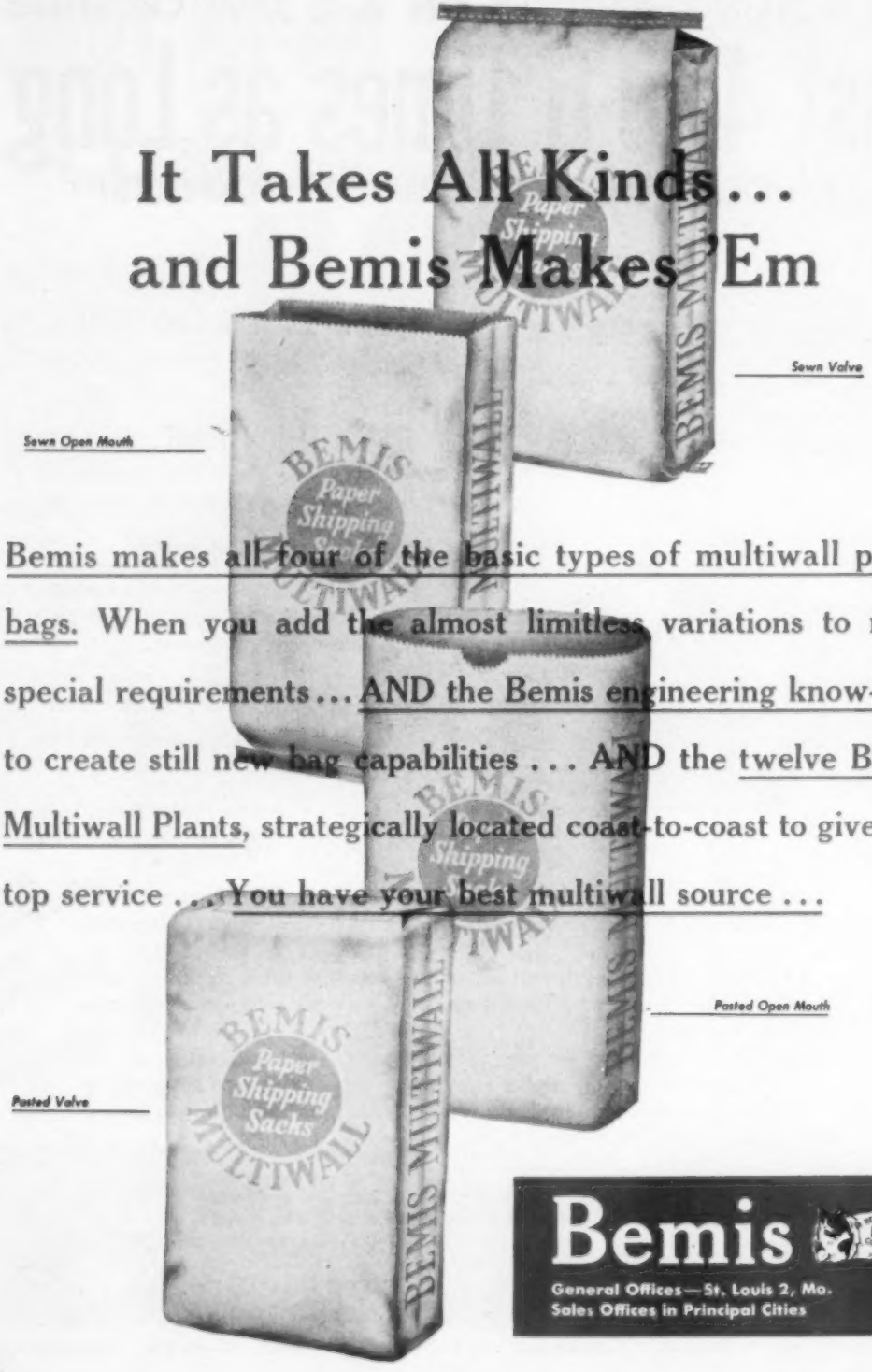

Jaw Crushers

Gyratory Crushers


Grinding Mills

Kilns, Coolers, Dryers

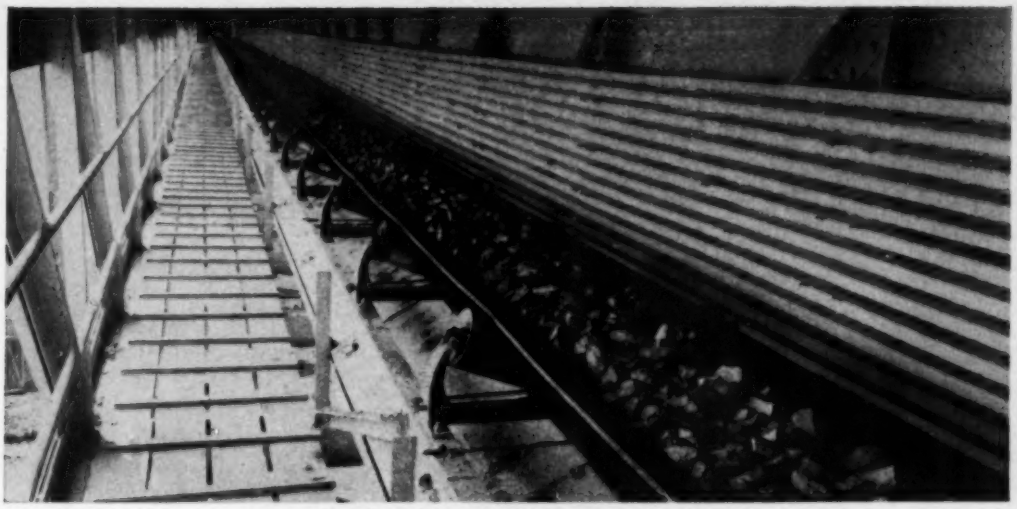
# It Takes All Kinds... and Bemis Makes 'Em




Bemis makes all four of the basic types of multiwall paper bags. When you add the almost limitless variations to meet special requirements... AND the Bemis engineering know-how to create still new bag capabilities ... AND the twelve Bemis Multiwall Plants, strategically located coast-to-coast to give you top service ... You have your best multiwall source ...

**Bemis**

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities



Limestone rock is rapidly transferred from storage to kiln-feed surge bin by a Link-Belt 24-in. wide, 284-ft. long inclined belt conveyor.

# TOTAL ENGINEERING

## It's LINK-BELT's answer for improved belt conveyor performance

BELT conveyor efficiency begins with correct analysis of overall system requirements. And right from the start Link-Belt offers you unique advantages. Our engineers can apply broad experience to your bulk handling problems.

Working with a complete line of quality components, they can select the belt conveyor equipment best suited to your exact needs. What's more, Link-Belt has a nation-wide engineering organization that will follow through on every detail. This includes supplying all related equipment . . . building supporting structures and enclosures . . . erecting the complete job, if desired.

It's easy to see why "total engineering" results in top belt conveyor performance. For complete information, call the Link-Belt office near you today.

13.181-Q

**LINK-BELT**

**BELT CONVEYOR EQUIPMENT**

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.

**LINK-BELT builds a complete line of belt conveyor components**

**ALL TYPES OF ROLLER BEARING IDLERS**

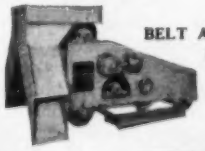
Impact-cushioning idler

45° troughed idler

Belt-training idler

20° troughed idler

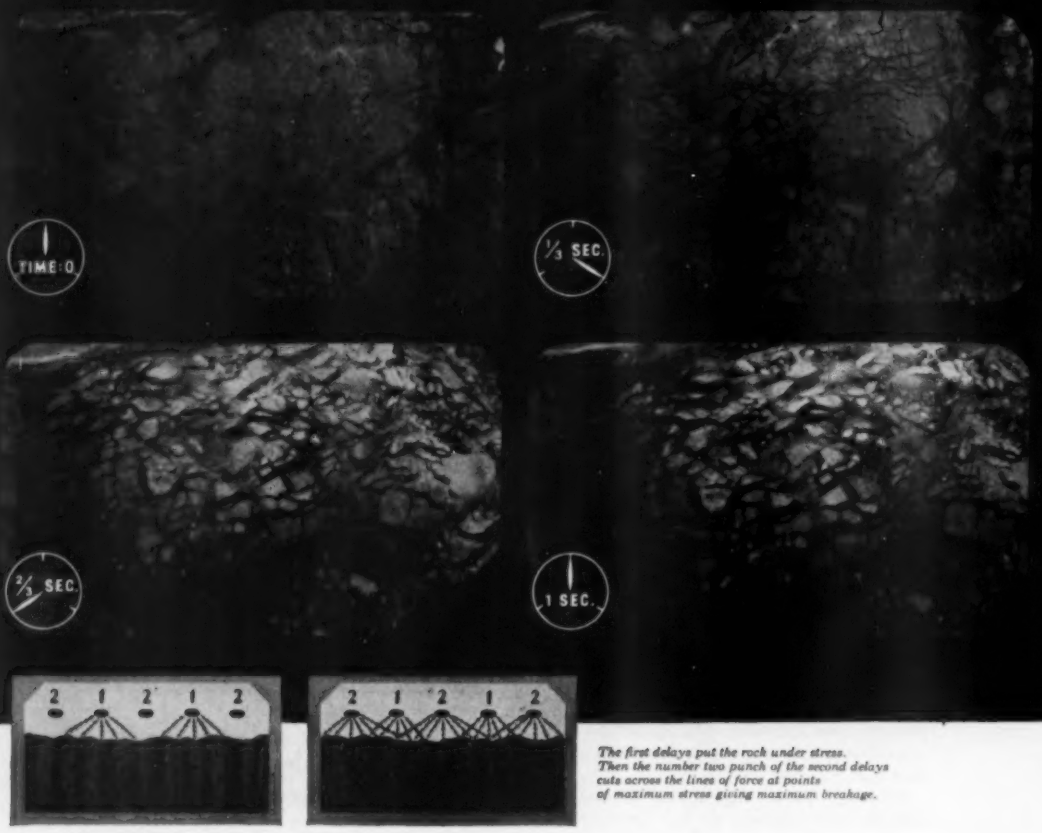
Return idler



**BELT AND MOTOR PROPELLED TRIPPERS**

**COMPLETE TERMINAL MACHINERY**

# Here's how ROCKMASTER® gives better breakage




*The first delays put the rock under stress. Then the number two punch of the second delays cuts across the lines of force at points of maximum stress giving maximum breakage.*

THIS unusual sequence of photos shows explosives force, first swelling and then bursting a solid face of granite. It is visual evidence of the excellent breakage possible with the ROCKMASTER blasting system used in an alternate pattern.

Theory behind the breaking action of this pattern is that the first delays, detonating within definite limits of controlled timing, place the entire burden under stress. Then at the moment of maximum tension the second delays, also firing with controlled timing, throw the second punch which produces a wedging and bursting action throughout the burden. The explosives gases of alternate ROCKMASTER blasting can be kept under prolonged confinement, reducing both air blast and ground vibration to a minimum.

Alternate action cannot be duplicated by progressive milli-second delay firing methods or by any form of top detonation.

If you want to see how others have profited by using ROCKMASTER milli-second delay detonators with the ROCKMASTER system of explosives choice and loading methods, send for your free copy of the 20-page book "Quarry Blasting the ROCKMASTER Way."

ATLAS

## ATLAS EXPLOSIVES

*"Everything for Blasting"*

ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE

*Offices in principal cities*

# It's designed especially for top kiln performance!

TAKE a close look at Permanente Periclase-Chrome bricks for rotary cement kilns and you'll find they cut down-time for replacements to a minimum—give you higher production. That's because they are *developed especially* for hot zone linings.

Their special design combines high purity, pre-shrunk periclase grains with an *exclusive* patented bonding medium. Result: a kiln lining of maximum refractoriness with high resistance to chemical attack by cement clinker.

Verified performance records show that Permanente Periclase-Chrome brick have withstood as many as *17 shutdowns for various causes without any loss of brick due to spalling.* They take a good coating, hold it well, and have great resistance to thermal shock.

If you feel that an appraisal of your rotary kiln performance would be helpful, Kaiser Chemicals will be glad to work with you. Installation assistance also is available at no extra cost.

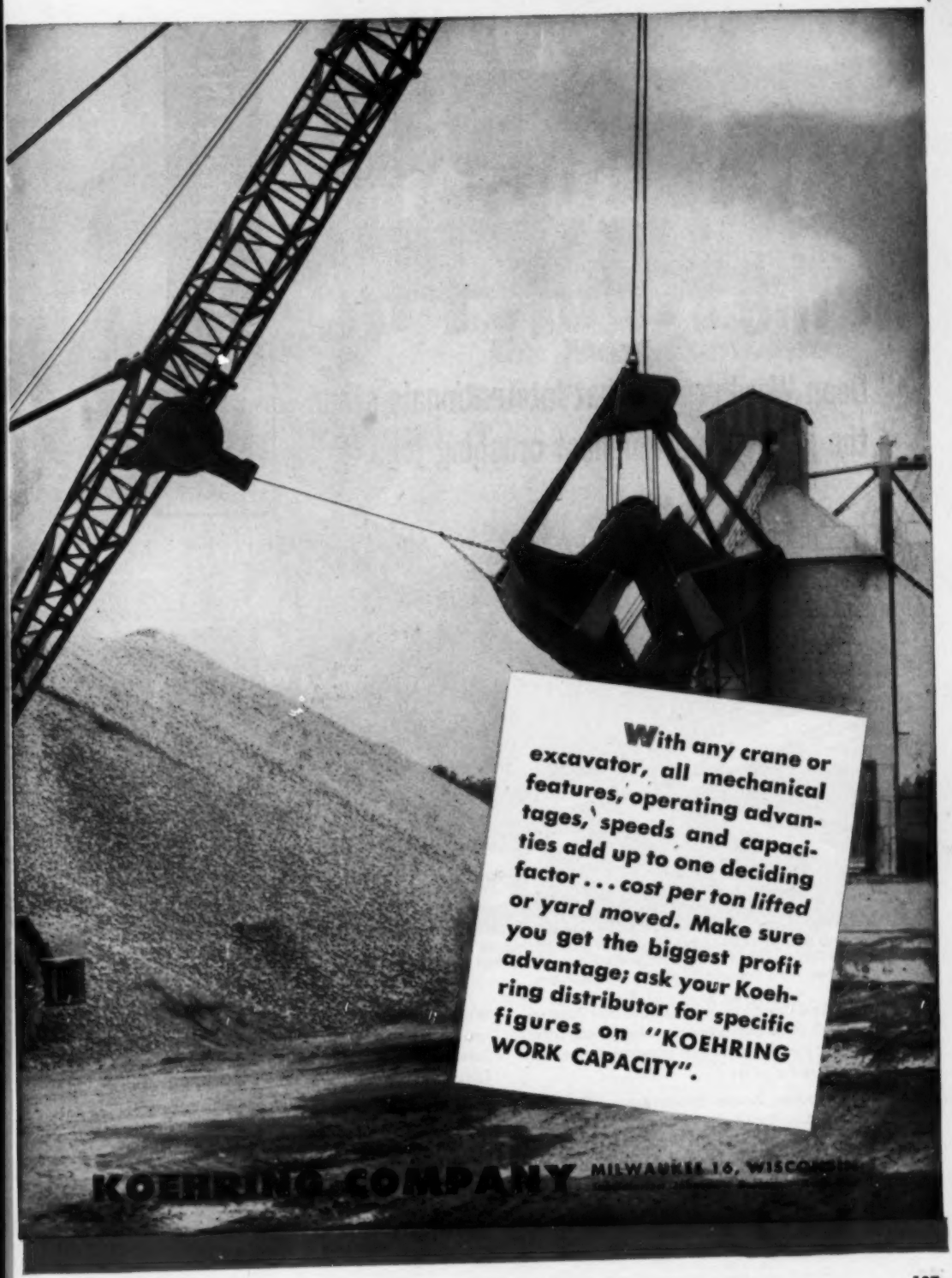
Standard brick sizes supplied in both burned and chemically bonded forms. Recently expanded facilities insure superior service. Call or write principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

## Kaiser Chemicals

**Pioneers in Modern Basic Refractories**

*Basic Refractory Brick and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase*

You owe it to yourself to check...
"KOEHRING WORK CAPACITY"
KOEHRING
HEAVY DUTY
7½ to 79½ TONS lift capacity . . . ½ to 2½ YARDS dipper capacity


With any crane or excavator, all mechanical features, operating advantages, speeds and capacities add up to one deciding factor . . . cost per ton lifted or yard moved. Make sure you get the biggest profit advantage; ask your Koehring distributor for specific figures on "KOEHRING WORK CAPACITY".
KOEHRING COMPANY MILWAUKEE 16, WISCONSIN

# Fourteen Years on the Rock Pile

## Dean Word proves that Internationals stand the gaff on the toughest crushing jobs

INTERNATIONAL

INTERNATIONAL HARVESTER

POWER THAT PAYS

**NEW AND OLD INTERNATIONALS TEAM UP FOR CRUSHING PROFIT.** A new International UD-24 and a 14-year-old International engine (left background) power crushing plant that turns out 700 cubic yards of road rock per 8-hour shift for the Dean Word Company of New Braunfels, Texas.

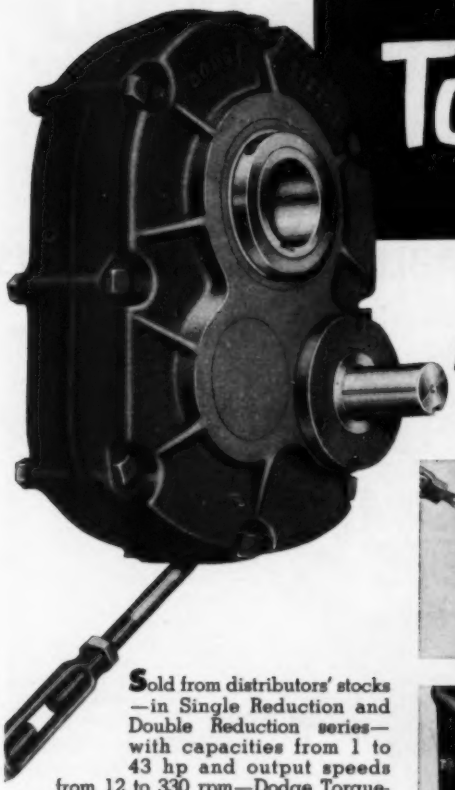
Dean Word Company purchased a new International UD-24 on the record of a 14-year-old International that has been powering their primary jaw crusher for years.

Superintendent Erwin Smith says: "That old International shows the performance that can be built into an engine. It went to work on our crusher in 1937, gets the valves ground or new rings when we get around to it every four or five years, and it runs as good today as when it left the factory. We bought the new UD-24 on the record of the old engine."

Wherever steady, year-after-year power is needed for the heavy crushing jobs, you'll find Internationals in the pit. Your International Industrial Distributor or Power Unit Dealer will be glad to show you several models to fit your power requirements. Find out about his up-to-the-minute repair shops and his full parts stock, backed by a neighboring International Harvester Parts Depot. Get the facts on International *"Power that Pays."*

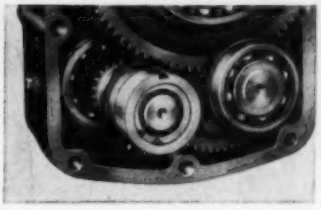
**INTERNATIONAL HARVESTER COMPANY**
**CHICAGO 1, ILLINOIS**

# Torque-Arm



## The Most Complete Line of Shaft-Mounted Speed Reducers!

**TRI-MATIC OVERLOAD RELEASE**
Provides instant, positive protection for driven machines, motors and reducer itself. Automatically (1) loosens the belts, (2) cuts off power, (3) gives a warning.



**TORQUE-ARM BACK STOP**
Available from stock when required. Easily installed—sealed inside reducer housing. Simple, positive action prevents reversal.

Sold from distributors' stocks—in Single Reduction and Double Reduction series—with capacities from 1 to 43 hp and output speeds from 12 to 330 rpm—Dodge Torque-Arm is the new and modern idea in speed reducers.

No special engineering required. No foundation to provide. No flexible couplings. No sliding base. No lining up difficulties. No expensive installation. Stock Taper-Lock sheaves prescribed for each job to provide desired speeds. Application to other machines is practical and easy.

Unit is driven through any V-Belt Drive. Torque-Arm, fastened to any fixed object, anchors the reducer unit. Turnbuckle provides fast and accurate adjustment of belt tension.

Standardize on Torque-Arm, the speed reducer that saves you money.

**DODGE MANUFACTURING CORPORATION**
**4000 UNION STREET, MISHAWAKA, INDIANA**

**DODGE**
*of Mishawaka, Ind.*

***CALL THE TRANSMISSIONEER***, your local Dodge Distributor. Factory-trained by Dodge, he can give you valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone book.

TAPER-LOCK SHEAVES, SEALED LIFE V-BELTS

DODGE-TIMKEN PILLOW BLOCKS

TAPER-LOCK FLEXIBLE COUPLINGS

ANNOUNCING 3 NEW MODELS IN THE 100 SERIES

# DIAMOND *Single pass*

## PORTABLE CRUSHING PLANTS

Model 124
Portable Crushing Plant
Sand Rejector Optional

## 3 MODELS... capacities from 30 to 70 tons/hr.

Designed for frequent moving, quick set-up and knock-down to give you more efficient crushing *where* you want it—*when* you want it. Ideal for counties and townships, secondary and access road construction, and areas where a high degree of mobility is needed. Low hopper height (10' 4½") gives ease of loading with ½ or ⅜ cu. yd. shovel. Heavy Duty Grizzly openings give higher crusher production with minimum of scalping. Location of wheel bar tongue and short wheel base provides needed maneuverability on road or in pit. Hinged delivery conveyor eliminates dismantling for towing. Mechanical or air brakes and fully guarded drives mean added safety. Adjustable single eccentric plate feeder provides a constant, even flow of pit run material.

Completely modern in every way, the Diamond Portable Crushing Plant is your answer to more efficient crushing.

### OUTSTANDING FEATURES

1. Highly portable
2. Controls centrally located
3. Low loading height
4. Low traveling height
5. Light in weight
6. Heavy in production
7. Clutch operated feeder
8. Oversized vibrating screen
9. Sand rejector (optional)
10. Power unit plant mounted

**FREE** Get the facts and specifications that tell you how a Diamond Portable Crushing Plant will increase your production. Send for new Single Pass Gravel Plant Bulletin 1000.

*Everything... for the aggregate producer*

**DIAMOND IRON WORKS, INC.**
AND THE MAHR MANUFACTURING CO. DIV.
1756 N. 2ND STREET, MINNEAPOLIS 11, MINNESOTA

OFF THE ROAD

# GENERALS

ON THE ROAD

**Resist cuts, scrapes, bruises... Give more traction! More speed! More safety—**

*WORK FASTER... LAST LONGER... COST LESS*

**more profit for you per job!**

GENERAL L. C. M. Broad, deep, self-cleaning tread lugs and reinforced shoulders for more traction off-the-road. Longer wear on razor sharp mine and quarry surfaces.

GENERAL H. C. T. for most work on-the-road, some off. More rubber, more cords per inch for greater safety. Extra traction through sand, gravel, slush, mud.

**THE GENERAL *L.C.M.***

**THE GENERAL *H.C.T.***

***Make Every Worn Tire Work Longer for More Profit!***

**Your GENERAL TIRE DEALER will KRAFT SYSTEM RECAP Worn Tires with the New GENERAL Truck Tire Tread of Your Choice**

KRAFT SYSTEM RECAPPING
A GENERAL TIRE SERVICE

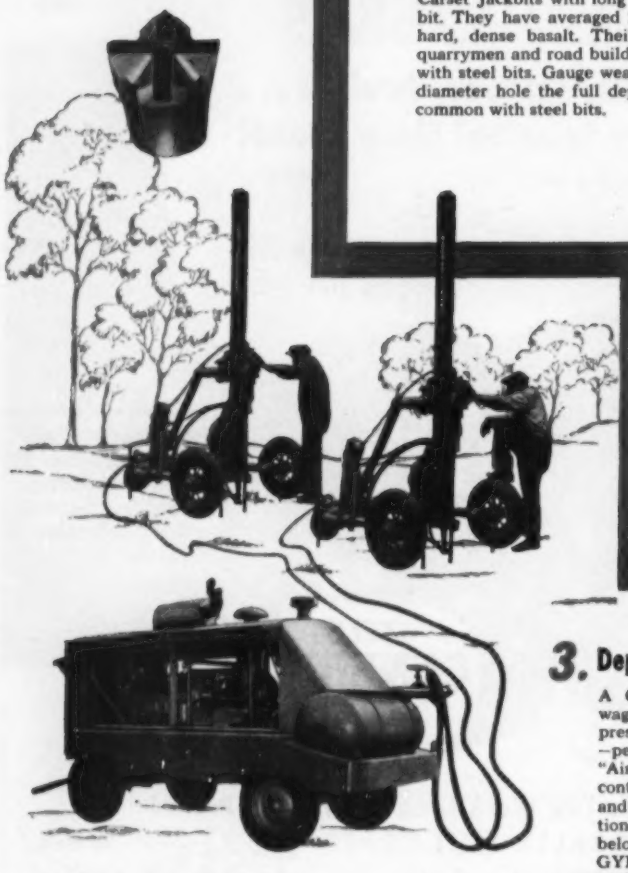
You're throwing away money when you throw away worn tires or accept an ordinary "adjustment" for them. Let your General Tire Dealer—a tire expert—restore worn tires with famous factory controlled Kraft System Recapping. You choose from the complete line of on and off-the-road new General Tire treads and he'll put that tread on your worn tire. He can do sectional repairs too. Get Kraft System Recapping—get more profit from every tire.

**SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT**

# 3 steps to faster drilling

## 1. Bits That Cut Faster—Stay Sharper Longer

Carset Jackbits with long lasting Carboloy inserts give more footage per bit. They have averaged 260 feet—compared to 1 foot for steel bits—in hard, dense basalt. Their higher drilling speeds have enabled many quarrymen and road builders to complete five blast holes for every three with steel bits. Gauge wear is so low that one bit will produce a uniform diameter hole the full depth of the bore—eliminating the tapered holes common with steel bits.



## 2. Powerful Fast-Working Drills

FM-3 wagon drills combine maximum drilling power with complete flexibility for drilling in any position. Mounting the hard-slugging X-71 WD rock drill, the FM-3 is unexcelled for drilling speed and hole-cleaning ability. It handles 6-foot steel changes and drills holes up to 24 feet deep. An exclusive self-locking, slip-proof worm gear arrangement quickly raises or lowers the yoke into any position. The tower can be inclined to any desired angle and rotated at right angles to the carriage for operation in restricted areas. The wheels can be turned 90° for line holing close to a face.

## 3. Dependable, Economical Compressors

A GYRO-FLO 600 easily handles two FM-3 wagon drills. The portable two-stage rotary compressor supplies a smooth flow of air at all times—permits smoother operation of air tools. The "Air Glide" capacity control with "Floating Speed" control of engine keeps pressure between 100 and 110 psi at all times. The oil-cooling-lubrication system keeps discharge air temperatures below 200° and wear down to a minimum. The GYRO-FLO 600 can be moved quickly into new positions on the job because it is up to 40% lighter than other equal-capacity compressors. Other models—105, 210, 315 cfm.

*Use the* IR CONTRACTORS' COMBINATION

- Everything you need for AIR POWER.
- Top quality machines that work as a team.
- Machines designed, built, sold and serviced by men who know AIR POWER.

**Ingersoll-Rand**

11 BROADWAY, NEW YORK 4, N. Y.

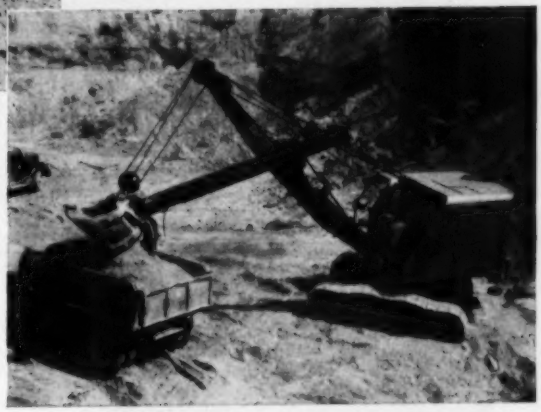
847-14

COMPRESSORS • TAMPERS • ROCK DRILLS • WAGON DRILLS • JACKBITS • DIGGERS • PUMPS

# CAN YOU GET THIS REACH WITH YOUR SHOVEL?

**24'-1" CUTTING RADIUS**
**45° BOOM—½ Yard**
**Model 30**

**28'-1" CUTTING RADIUS**
**45° BOOM—¾ Yard**
**Model 45**



**Here we show** two shovels—a half-yard above and a ¾ yard at right but both offering wide working ranges which invite comparison with any other shovel of the same capacity. These are two distinctly different models. The ¾ yard shovel is not a built-up machine from the ½ yard design. For instance the Model 45 has a unit-cast base with a 71" diameter roller path whereas the Model 30 has a 56" diameter roller path.

**All the way** from ground to boom-point the ¾ yard shovel is bigger, heavier and more powerful. However both shovels have tandem drums, one-piece continuous chain crowd, electric dipper trip, power booster clutches and many other heavy-duty design and construction features that mean bigger operating value. Why not get the full story on these convertible shovels today by writing for catalogs.

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN

216

***write for your catalog***

*Get either or both these catalogs, packed with pictures of parts, assemblies and jobs. Ask for Catalog 2530 on the ½ yard and 3745 on the ¾ yard machine—no obligation.*

# BAY CITY

**SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS**

# TOP PERFORMANCE

AROUND THE WORLD

Hendrix

DRAGLINE BUCKETS

⅜ to 40 Cubic Yards

A TYPE & SIZE FOR EVERY DIGGING PURPOSE

HENDRIX Lightweight DRAGLINE BUCKETS

*Hendrix Buckets May Be Special Ordered WITHOUT PERFORATIONS*

HENDRIX MANUFACTURING CO., INC.

MANSFIELD – LOUISIANA

## . . . for WILLIAMS SUPER-SLUGGER CRUSHER reducing power shovel stone to 2" or smaller in ONE OPERATION

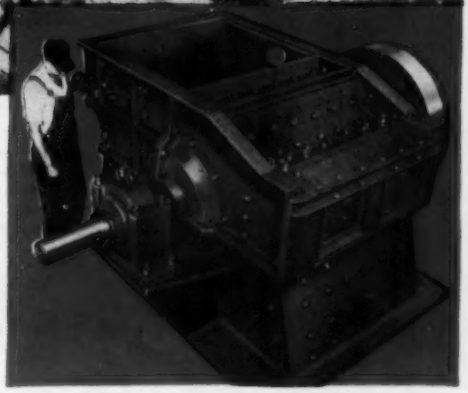
The Super-Slugger is designed for big reduction jobs, either as regards size of feed or hourly output.

Generally one Super-Slugger will do the work of a primary and several secondary reduction units, eliminating connecting conveyors and additional foundations, drives, etc.

Material is reduced by the Williams Hammer Principle with heavy hammers crushing the material by impact until of proper size to pass through the grate or cage. Eight standard sizes available.

WCS1-7

**WILLIAMS PATENT CRUSHER AND PULVERIZER CO.**
802 St. Louis Avenue. St. Louis 6, Missouri



**WILLIAMS ALSO MAKES:**

Heavy-duty hammer mills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "package" crushing and grinding plants.

# WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST BUILDERS OF HAMMER MILLS IN THE WORLD

# Look what you can do

## Soak it in Acid Water

It won't penetrate the live Neoprene cover. This jacket does more than keep water out; it will not swell and deteriorate when exposed to oil and grease.

## Drag it over rock–

The tough cover will take abuse like an elephant's hide. Amerclad cables are famous for their abrasion resistance. They can be dragged over sharp rock and rough floors without damage.

## Flex it–

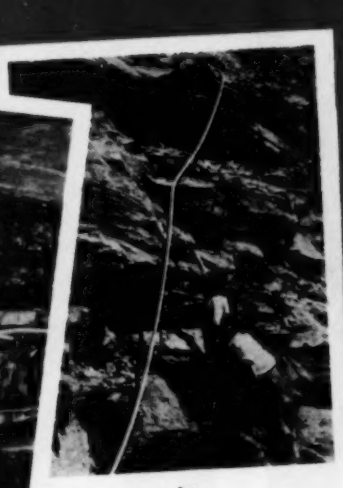
Amerclad Welding cables are made from extra-fine strands to eliminate strain on the operator's wrists. This also allows the cable to be easily snaked into restricted quarters.

AMERICAN STEEL & WIRE DIVISION
USS
TRADE MARKS
AMERICAN ELECTRICAL WIRE AND CABLE
UNITED STATES STEEL

# with AMERCLAD:

## Reel it in or out-

Mine operators like the way Amerclad stands up under the continuous reeling necessary on so many mine machines. Here, the cable is reeled in and out—all day long—on a minimum diameter pulley.



## Expose it to sunshine-

Amerclad cables are designed to give top service even when exposed to sunshine, ozone, oil or grease. This chemical protection, combined with the mechanical strength of Amerclad, assures you of long life even under the most punishing conditions.

## Hang it over cliffs-

Amerclad has the strength to resist abrasion. Even though it sways in the wind and grinds against rock particles, the tough Neoprene jacket will bounce back for more.

**WRITE FOR INFORMATION.** There is an Amerclad cable or cord to meet your exact needs. Amerclad cables are designed for specific uses on portable machinery, tools, motor and generator leads, welders, machine tools, appliances, mining machinery—wherever you need a heavy-duty cable that will give long life and freedom from trouble.

*Get in touch with your nearest AS&W office or write: American Steel & Wire Division, Rockefeller Building, Cleveland 13, O.*

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS

TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

## U·S·S American Electrical Wire and Cable

UNITED STATES STEEL

# Having trouble with this tough trio?

## switch to SUPER-TEMPERED PRECISION SPACE SCREENS

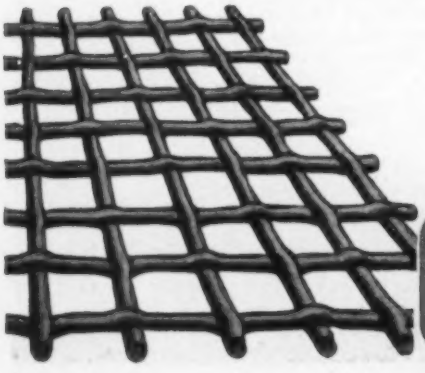
Abrasion . . . Vibration . . . Fatigue! Here's a trio of trouble-makers that can play hob with your production schedules when they team up against ordinary screens.

Want to make 'em yell quits? Just install Super-Tempered Precision Space Screens and find out what extra durability and tightness can mean to you in less downtime, longer, more accurate service, greater tonnage output at lower cost. And here's why:

- **Hard and tough steel**
- **Precision crimping**
- **Powerful looming**

To order, write or phone our nearest district sales office.

THE COLORADO FUEL AND IRON CORPORATION – Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION – Oakland, California
WICKWIRE SPENCER STEEL DIVISION – Atlanta, Boston, Buffalo, Chicago, Detroit, New York, Philadelphia



**SUPER-TEMPERED**
**PRECISION SPACE SCREENS**
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION
CF&I

# ONE STAGE BULLDOG HAMMERMILL

NON-CLOG MOVING BREAKER PLATE

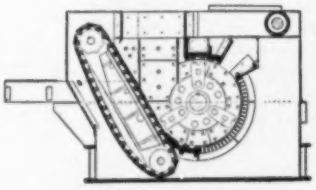
# CAR LOADS

[PARTIAL SHIPMENT FOR ONE CUSTOMER]

# BULLDOG HAMMERMILLS

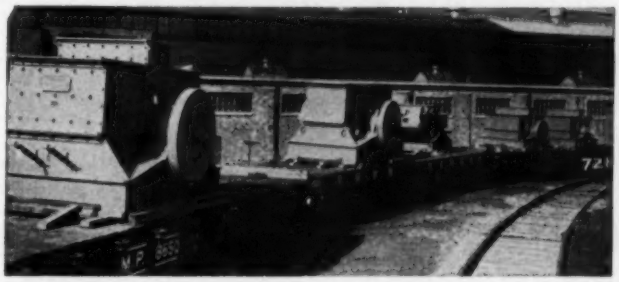
[PRIMARY - SECONDARY - FINE REDUCTION]

**BULLDOG HAMMERMILLS**
**for**
**DRY OR WET STICKY**
**MATERIALS**
**FOR THOSE TOUGH HEAVY-**
**DUTY CRUSHING JOBS**
**1 to 1000 ton capacity**



**Ask for List of Installations**

**ASK FOR LIST OF INSTALLATIONS**



***We will gladly survey your reduction requirements and recommend the proper equipment without cost or obligation. Just write or call.***

**HAMMERMILLS, INC.**
**4766 W. Division St.**

***division of***
**Chicago 51, Illinois**

**PETTIBONE MULLIKEN CORP.**
**Phone SPaulding 2-9300**

**HAMMERMILL** **CHICAGO**

**HAISS** **NEW YORK**

**UNIVERSAL** **CEDAR RAPIDS**

GM DIESEL
CASE HISTORY No. 528-2

**USER:** Ritchie Brothers Construction Co., Wichita, Kansas, paving contractor.

**INSTALLATION:** GM 3-71 Diesel, replacing an 8-cylinder gasoline engine in a 3/4-yard dragline equipped with 46-foot boom.

**PERFORMANCE:** Plant Superintendent H. G. Hoffman reports the power and quick pickup of the GM Diesel engine permit this dragline to do 25% more work. Fuel and maintenance costs are both reduced.

# PRODUCTION WENT UP 25%

## when GM Diesel went in

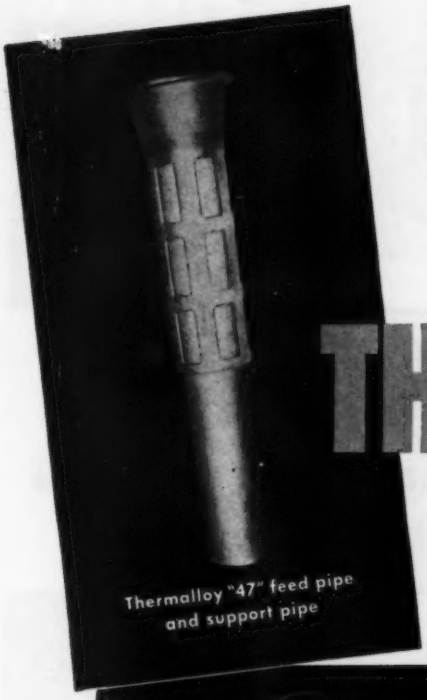
"General Motors Diesel power made a real diesel out of this unit," says Mr. Hoffman. "We also use a 6-71 to power an asphalt plant, and recently, when we bought a new shovel, we ordered it equipped with GM Diesel power."

In new equipment or out, a 2-cycle GM Diesel gets more work done at lower cost. It produces power at every piston downstroke to give equipment maximum torque the instant a load hits—before engine r.p.m. falls off. A GM Diesel starts at the push of a button, burns low-cost fuel, and delivers years of dependable service. Parts cost less and are readily available. Talk with other GM Diesel owners. Then see your GM Diesel distributor for economical horsepower—for any job.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN

*It pays to Standardize on*

GM
GENERAL MOTORS
DIESEL POWER



Thermalloy "47" feed pipe and support pipe

# Reduce down time and replacement costs

*Specify*

# THERMALLOY

## KILN PARTS

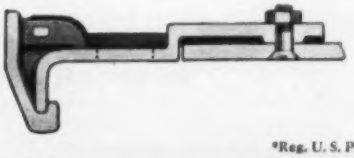
In scores of calcining operations, Thermalloy* has proved that it can materially reduce down time and replacement costs. This tough heat-resistant alloy was developed specifically to take heavy loads and rough usage . . . to resist corrosive gases, excessive heat (up to 2100° F) and abrasion. It is not just one alloy, but a *group* of alloys—each developed to meet a specific heat and abrasion problem.

For feed ends, feed pipe, kiln shell segments, grates and burner nozzles . . . investigate Thermalloy's superior heat and abrasion resistant properties. One of our sales engineers will gladly help you select the Thermalloy grade best suited to your application.

Call your nearest Electro-Alloys office, or write Electro-Alloys Division, 4004 Taylor Street, Elyria, Ohio.

Thermalloy "40" kiln feed end

*Segmental Design Kiln End:* Kiln is protected by high heat-resistant Thermalloy to distance of 16½" back from mouth. Shield casting easily replaced by knocking out pins.



*Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

Substantial savings are realized by cement mill operators using ABK Metal liners in primary, secondary or tertiary compartments for wet or dry grinding of raw stone or finished product.

Extended liner life of as high as 3 or 4 times can be expected when ABK Metal replaces ordinary iron liners. That's because of the extreme hardness (500 to 700 Brinell, as required) and very high resistance to abrasion that is characteristic of every ABK Metal casting. A nickel-chrome iron of controlled structure, ABK Metal is produced only by Brake Shoe.

Why let abrasion steal your operating dollars. Specify ABK Metal castings . . . cut your replacement, maintenance and downtime costs and increase your grinding mills' efficiency.

QUALITY CASTINGS IN | DUCTALLOY
MEEHANITE
ABK METAL

AMERICAN Brake Shoe COMPANY

BRAKE SHOE AND CASTINGS DIVISION
230 Park Avenue, New York 17, N. Y.

March 1953

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT & QUARRY

## because it's RIGHT!

Yes, the GOCORP "King" is tops in each area in which it operates. That's because the blocks it makes are so superior, and are produced at a cost less than ordinary blocks. Here's a machine that represents the best and latest thinking of men with a lifetime of experience in this field. Block plant owners who have investigated, like the owner of this typical "King" operation, recognize these advantages GOCORP offers:

- Hydraulic "sequence operation"—for high quality blocks, low maintenance.
- Vibrating mold filled directly from main supply hopper—no feed drawer.
- Intense vertical vibration, combined with pallet-to-mold clamping, assures compact, uniform units.
- "Tomorrow's machine today"—removes obsolescene risk.

These are only a few reasons why the GOCORP "King" rules. If you want three or four cycles per minute—six blocks per cycle—with one operator—simultaneous production of two sizes, if desired—write for further details on the "King" and name of our representative near you.

GO CORP
ADRIAN-MICH.
403 Block Street Adrian, Michigan

# THE HOSPITAL THAT SERVES A MILLION PEOPLE

## 'Incor' Speeds Concrete-Frame Erection

New Beekman-Downtown Hospital, first general hospital built in Manhattan in 20 years—ultra-modern, 8-story, reinforced-concrete frame, cost complete, including land, $5.5-million.

When the project ran into cold weather, the Contractor switched to 'INCOR' 24-HOUR CEMENT—maintaining well-planned frame-erection schedules, with important heat-protection savings. Smooth-working 'Incor' mix facilitated finishing.

● Upwards of a million people work or live in Lower Manhattan. To provide adequate hospital facilities, this ultra-modern, 170-bed Beekman-Downtown Hospital replaces the former 96-bed institution.

The Hospital's Directors wanted the best of everything— with utmost emphasis on dollar values. So fullest use was made of reinforced concrete frame construction, with its inherent fire-safety and economy.

BEEKMAN-DOWNTOWN HOSPITAL
Architects: LORIMER & ROSE

Structural Engineers:
ROBERTS & SCHAEFER CO.

Contractor: CAULDWELL-WINGATE CO.

Concrete Contractor:
RIZZI CONSTRUCTION CO., INC.

Ready-Mix Lone Star and 'Incor' Concretes:
COLONIAL SAND & STONE CO., INC.

—All of New York City—

### Here's Why They Ask for 'Incor'

With relatively long spans of about 21 ft., the well-planned concreting schedule was maintained during Summer, using Lone Star Cement and stripping when concrete attained 2,000 lbs. per sq. in.

Cold weather slowed the job and made costly heat protection necessary, so the Contractor switched to 'INCOR'* 24-HOUR CEMENT. The job was quickly back on schedule . . . concrete was stripped in 2-3 days, with minimum heat protection.

Right around the calendar, 'Incor'* promotes smooth-running, time-saving efficiency on which today's profits depend. One reason why so many Ready Mix Operators make 'Incor' concrete available as part of their good service.

*Reg. U. S. Pat. Off.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

## LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N.Y. • BETHLEHEM, PA. • BIRMINGHAM
BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 126,000,000 SACKS ANNUAL CAPACITY

The CONCRETE MANUFACTURER

March 1953

# A Challenge

IN this issue (page 210) there appears a complete report of the recent convention and exposition of the National Concrete Masonry Association, a tremendous affair held in the Public Auditorium at Cleveland during the last weeks of January. Some 70 major manufacturers of machinery and supplies for the block industry considered the occasion of sufficient importance to justify sizable outlays of time, effort, and money to display their wares. Practically all important factors were represented.

Just a week before in Chicago the National Association of Home Builders held its ninth annual convention and exposition. Well over 200 manufacturers of equipment and materials for the multi-billion-dollar building industry deemed the event of sufficient importance to justify heavy expenditures in order to display their wares. All important factors were represented—with one enormous, incomprehensible exception: in over 200 displays of modern construction materials there was hardly a scrap of evidence to indicate even the existence of the concrete masonry industry, let alone its status as a significant factor in the building field!

This was not an oversight, or a fumble, or the result of a temporary situation which one may hope will be remedied before the time rolls around for another Home Builders Show. As matters stand now, concrete masonry may never be adequately represented at a Home Builders Show because the industry as a whole exhibits an incredibly pinch-penny attitude toward all aspects of the problem of merchandising. We have heard, read, and taken part in literally endless discussions in the "how nice it would be" vein, but every feasible plan so far proposed has fallen apart the instant it became apparent that somebody was going to have to part company with some money.

One of the primary roadblocks has been the individual producer's ingrained fear that in contributing to any program designed to benefit the industry as a whole, he must inevitably help competitors who haven't voluntarily cut loose from a nickel since the San Francisco earthquake. Well, if we're going to wait until there aren't any free riders left in the industry, we might just as well settle down and wait for the millenium.

But we think there has also been an inherent flaw in much of our thinking about the problem of merchandising concrete masonry on a national scale. We have persisted in dreaming about relatively cosmic plans requiring fairly vast expenditures, instead of attempting to isolate and solve some small portion of the total problem as a means both of gaining experience and demonstrating what might be done.

We think the Home Builders Exposition might be an excellent place to start. Each year it attracts thousands of top-notch home builders from all over the United States, whose primary objective in attending is to take back to their jobs a fresh new idea or two. We believe the block industry would benefit incalculably if its product were intelligently displayed before this audience, and we can see nothing about such an undertaking that should in the slightest degree overstrain the industry's capacity, ingenuity, or financial resources.

To take the matter one small step beyond the mere discussion stage at which most similar proposals seem to expire, THE CONCRETE MANUFACTURER herewith offers to pay into the treasury of the National Concrete Masonry Association the first $100 of a special fund which shall be earmarked for the purpose outlined above. We hope others—many others—will follow suit, if for no other reason than to demonstrate conclusively that the block industry can marshall its energies and talents in a worthy cause. Once that open issue is resolved, perhaps both the means and the determination can be found for a broad assault on the problems of merchandising.

William M. Avery

# *Another Leader** IN THE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS!

★ This is the 99th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

## *"The Vibrapac is the Only Money-Maker in the Block Business that I Know of"*

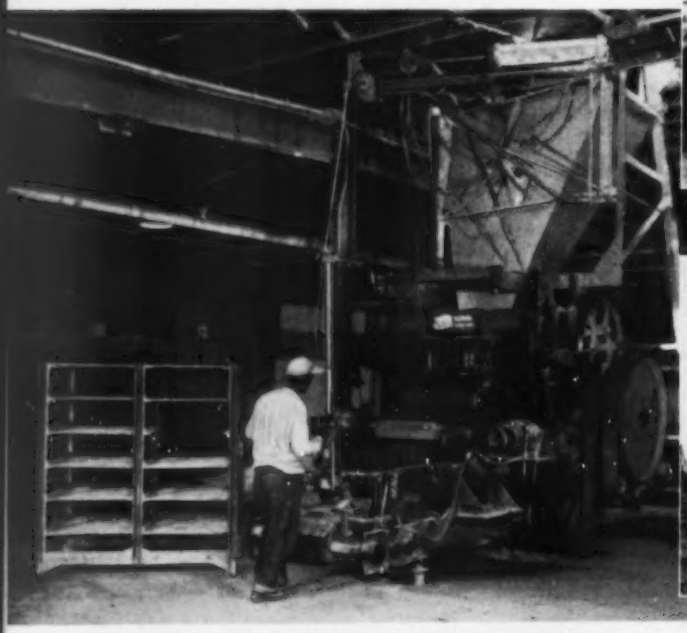
This statement from William L. Hovey, President of Hovey, Inc., Flint, Michigan, is significant. Mr. Hovey secured his first Vibrapac, a Front Pallet Feed Model, in 1948. This machine was so successful that a second Vibrapac was installed in April, 1952.

Yes, Vibrapacs are money-makers because they produce uniformly dimensioned, high-quality block on a steady production basis, day-in and day-out, with a minimum of "downtime". The fully-automatic Vibrapac Machines are designed and built to withstand long hours of continuous high production. The savings effected help to boost profits. Vibrapacs can also make more money for YOU! Why not investigate? Write today.

**BESSER MANUFACTURING CO., Alpena, Michigan, U. S. A.**
*Complete Equipment for Concrete Products Plants*

William G. Hovey discusses matters with his father, William L. Hovey, President, Hovey Inc., Flint, Michigan.

The Hoveys standing in front of one of their delivery trucks. Note lift-truck used for loading trucks.



Besser Vibrapac, Front Pallet Feed Model, installed in the Hovey plant. The machine is fully automatic. One man removes finished block with power off-bearing hoist, and, with no lost motion, returns empty pallets to the Vibrapac. In April 1952, another Vibrapac was installed to the right of machine shown above.

Exterior view of the Hovey plant at Flint, Michigan. The company began to manufacture concrete block in 1946. Present production is being used for homes, industrial plants, commercial buildings, churches and schools in Flint and the surrounding area.

**BESSER**

BATCH MIXERS | SKIP LOADERS | BLOCK & BRICK CUBERS | SUPER VIBRAPAC | SINTERING PLANTS | ACROW CENTERS | ROOF TILE MACHINE

A 7238-1PB-C

# news of the concrete industries

## Basalt Rock Company Plans Precast Homes Manufacture in New Plant

The Basalt Rock Company, Napa, Calif., is planning the manufacture of "packaged homes" prefabricated from lightweight concrete sections.

The company, which has just started a new kiln for expanding shale at its Rocklite plant, will use the material in making the lightweight sections for the homes. The manufacturing operations will take place in a new building under construction at Napa Junction where traveling cranes will be used to handle the sections.

The company plans to market a Basalt Plan Home, which may be purchased in several models. So far three demonstration homes have been erected in Napa to show the feasibility of transporting the sections and the final fabrication in a finished home.

Basalt Rock Company is the originator of Strestcrete, a prestressed, lightweight aggregate concrete. This material has been used in panel form and complies with the California state building code governing earthquake resistance in construction. Schools, churches, stores, warehouses and industrial buildings have been made from the Strestcrete sections.

According to A. G. Streblow, president of Basalt Rock Company, the company is perfecting a process of prestressing the slabs for homes so that 40-ft. sections can be made and delivered that will not crack. There will be storage place in the new plant for panels and sections of the precast homes to accommodate 68 3-bedroom homes and 80 2-bedroom ones.

## White Top Concrete Staves To Be Made at Third Plant

Officials of the Radcliffe Silo Company, Inc., Topeka, Kans., recently announced that the firm will soon open a third plant, to be located in Ste. Genevieve, Mo. The product at the new plant will be White Top interlocking concrete staves.

According to an announcement issued by J. H. Radcliffe, president, negotiations have been completed for the purchase of buildings in Ste. Genevieve. In addition to the firm's facilities at Topeka, a second plant is producing staves at Boonville, Mo. Operation is scheduled to begin at the Ste. Genevieve plant about March 1.

## B. A. Bledsoe Named Asst. Mgr., Universal's Atlanta Pipe Plant

B. A. Bledsoe

Byron A. Bledsoe has been promoted to assistant manager and engineer of Universal Concrete Pipe Company's plant in Atlanta, Ga.

Mr. Bledsoe, a graduate of Tennessee University and the Yale University Bureau of Highway Traffic, is an associate member of A.S.C.E., a member of the Georgia Engineering Society, and the Institute of Traffic Engineers. He joined Universal in 1952 following work for the Highway Research Board at Washington, D. C.

C. Ray Wilhelm is manager of the Universal Atlanta plant, assisted by Mr. Bledsoe and LeRoy Epperson.

## L. L. Daugherty Named Head Of Mo.-Kan. Assn. for 1953

Newly-elected officers of the Mo-Kan (Missouri-Kansas) Concrete Products Association, Kansas City, Mo., are as follows: president, L. L. Daugherty, Eternacrete Products, Inc.; vice-president, Gus Main, Kansas City Concrete Pipe Company; secretary, C. Ernest Swanson, Concrete Building Units Company; treasurer, Benjamin Asner, Asner Blocks & Building Materials, Inc.

Named to serve as chairman of the executive committee was George W. Kulhavy, past-president of the association, of the Carter-Waters Corporation. Tip Brown, executive secretary, was also designated secretary-manager.

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The Umphlett Brikcrete Company has opened a plant in Summerville, S. Car., near Charleston. The company is owned by M. W., C. W, and C D. Umphlett. The plant has a capacity of 5,500 8-in. equivalents a day and holds a franchise for Brikcrete in Charleston, Dorchester, Berkeley, Colleton, and Georgetown counties.

## G. Fraser Named President Of N.C.P.A. of Canada At Fourth Convention

Garnet Fraser of Windsor, Ont., was elected president of the National Concrete Products Association (Canada) at the fourth annual convention at Toronto, Ont. He succeeds Walter Coupland of Cooksville, Ont.

Other executive members selected were John Pennachetti of Thorold and W. H. Kirkpatrick of Woodstock, vice-presidents; A. D. Wylie of Hamilton, secretary; and Brant Coleman of Aldershot, treasurer.

## U. of Toledo Receives Gift Of $1,100 Concrete Mixer

A laboratory concrete mixer, valued at $1,100, has been presented to the University of Toledo for its civil engineering laboratories.

The mixer is a gift from the Ohio Ready Mixed Concrete Association, Charles Kuhlman of the Kuhlman Builders Supply Co., and James Nicholson of the Nicholson Concrete Company.

Presentation was made by Mr. Kuhlman at a dinner of the association held in connection with the three-day short course in ready-mixed concrete held at the university of January 21 to 23.

## Death Takes Two Prominent Concrete Pipe Producers

The concrete pipe industry has lost two prominent producers through death recently. They were Arthur O. Neuman, president and general manager of the Mission Concrete Pipe Company, San Antonio, Tex., who passed away on January 18 of cerebral thrombosis, and W. B. Pittman, Jr., Los Gatos, Calif., who died on December 26 after an automobile accident.

Mr. Nauman was considered one of the grand old men of the pipe industry, whose product was always tops and his plant a model of efficiency. In addition to producing pipe, his firm also manufactured other concrete products.

Mr. Pittman started in the concrete pipe business with the Van Cleve Construction Company, Exeter, Calif., and later had his own plant at MacFarland. Recently he had been manager of the United Concrete Pipe Corporation's plant at San Jose.

## Price Decontrol Order Covers Many Materials And Operating Equipment

General Order Overriding Regulation 9, Amendment 41, issued by the Office of Price Stabilization, Economic Stabilization Agency, effective February 18, 1953, has decontrolled prices on many products related to the nonmetallic mining and concrete industries.

The following items and materials are included: cement (all types); masonry units (all sizes of blocks, bricks, and slabs); ready-mixed concrete; crushed stone (ballast, metallurgical, and chemical); gravel (ballast, roofing, and filter); sand (all types, including aggregate and industrial); slag; stone (rough rubble, riprap, flagging, fluxing, etc.).

In addition to the above, the following types of equipment used in the nonmetallic mining and concrete manufacturing industries are covered by the order:

Crushing, pulverizing, classifying, and washing machinery and equipment for storing and handling rock, sand, and gravel products.

Excavating and earth-moving machinery, including power cranes and shovels, draglines, clamshells, hoes, buckets, dredging machinery, ditchers, scrapers, rippers, elevating and blade graders, and all types of off-highway hauling equipment, including attachments and related equipment.

Conveyors and conveying systems, industrial, including portable conveyors.

Dust-collecting equipment, industrial, portable and stationary, including industrial vacuum cleaners.

Materials-handling equipment, excluding on-the-highway automotive vehicles.

Mining and quarrying machinery, including mine cars and trucks.

Ore-crushing and concentrating machinery.

## Mason Contractors' Meeting Features Exchange Forum

The Mason Contractors Association of America held its annual convention in Chicago's Sherman Hotel, February 1-4. The convention included an exhibit of materials and machines of value in masonry construction. Two sessions of the convention heard talks by Glenn Stanton, president of the American Institute of Architects, and Roy Wenzlick, an economist.

Other sessions were given over to reports and forums of committees of the association. Materials handling to lower costs and increase efficiency was covered in one program, and other sessions were devoted to earthquake damage and apprentice training.

One of the highlights of the convention was an exchange forum. This was a panel of members from the M.C.A.A. and the National Concrete Masonry Association. Benjamin Wilk, Standard Building Products Co., Detroit, Mich., and past president of N.C.M.A., served as moderator, and the panel included: John Strandberg, Concrete Building Units Co., Kansas City, Mo., another N.C.M.A. past president; Ralph Condo, James Condo & Sons, Somerville, N. Y., N.C.M.A.; William E. Tucker, Richmond, Va., M.C.A.A. research board chairman; William F Nelson, Washington, D. C., M.C.A.A. president; and H. R. Nemec, Cleveland, Ohio, mason contractor.

This panel had discussed the mutual problems of concrete masonry manufacturers and mason contractors at the Cleveland convention of the N.C.M.A. and gave a repeat performance for the contractors. The exchange forum is unique in conventions and represents a new method of promoting co-operation and a concerted attack on mutual problems.

The exhibits, which filled the exhibition hall and mezzanine floors of the hotel, featured many kinds of materials handling equipment; masonry saws; ornamental facing materials, including some fine displays of split concrete units; and masonry cements.

# Illinois Products Concern Uses Unit Heaters for Curing

A TEN-YEAR period of successful unit heater operation in the curing kilns of the Standard Concrete Company's plant at Springfield, Illinois, indicates the usefulness of this heating device in the curing of concrete products. Of the six kilns in which the unit heaters were installed, four are used for curing pipe, one for block, and one for various special items produced at the plant. A 24-hour cycle is generally used in curing the block, while the pipe stays in the kilns for at least 72 hours.

The heaters are horizontal delivery units, with steam supplied to them from a stoker-fired low-pressure boiler. This boiler also supplies steam to jets which discharge at the face of each unit. A constant temperature of 95 deg. F., and a near-saturation condition are maintained. At the end of the heating cycle the steam is turned off, but air circulation is continued by leaving the unit heater fans on until the kilns are unloaded.

When the unit heaters were originally installed, it was thought that kiln temperatures would have to be maintained at from 110 to 130 deg. F., making cooling of the heater motors necessary. However, after a short period of operation it was found that sufficiently rapid curing could be achieved at a 95 deg. F. temperature. At this temperature level there was no need to provide external cooling for the motors.

Because it is very compact, the unit heater is said to be particularly well-suited for supplying heat and air circulation in industrial installations. A unit heater weighing approximately 100 pounds, such as those installed at the Standard Concrete Co., has the same heating capacity as an old-style heating setup using over a ton of pipe coil or cast-iron radiating surface. This makes it possible to save space where space is at a premium. Unit heaters can be hung from the ceiling or mounted on walls, thus leaving valuable floor space for plant equipment.

The Springfield firm reports that its heaters have operated dependably and virtually trouble-free since they were first installed more than ten years ago. According to the company, the units are quickly responsive to sudden changes in demand, lend themselves readily to either thermostatic or manual control, and are quite satisfactory in respect to fuel economy.

● The horizontal delivery unit heater maintains an even 95-deg. F. temperature in the kiln where pipes are cured in the Standard Concrete Company's plant at Springfield, Ill. The steam which discharges from jets at the face of each unit keeps a near-saturation condition in the kiln until the concrete is set. Fans in the unit heater continue circulating air in the kiln until it is unloaded.

# Another HYSTER® Success Story...

**THE GEORGE P. FORNI COMPANY**
**Reinforced Concrete Water and Valve Boxes, Electrical and Gas**

## "I don't know what I'd do without the HYSTER" GEO. P. FORNI President

**H**andling operations cut in half. Labor savings up to 50 per cent. Increased production, more efficient work flow through better utilization of space and easier handling of raw materials and heavy finished products. This is the performance record of a Hyster 40 at the George P. Forni Company, Oakland, California. No wonder Mr. Forni says, "I don't know what I'd do without the Hyster..."

**1** ***"Operations center around our lift truck."*** Hyster 40 picks up pallet load of 28 water meter boxes (total weight 2,340 pounds) for transportation to steam room.

**2** ***"We are able to cut total handling operations."*** Pallet load of boxes being placed in steam room for curing. Note complete palletization of other items in steam room.

**3** ***"We are able to have all our stock stored in one place."*** One day in steam room is equivalent to 28 days in open air. Boxes are being set in storage yard, ready for delivery by truck.

**4** ***"We are no longer limited as to size or weight of products."*** These electrical conduit boxes measure 24x42x24 in., weigh 500 pounds each. Hyster 40 is removing them from storage for loading on delivery truck.

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# BLOCK CONVENTION and MACHINERY SHOW

## *Set Attendance Record* AT CLEVELAND

## Sam Paturzo Named to Serve as President of Association

ATTENDED by some 4,700 producers from all over the United States and Canada, the 33rd annual convention of the National Concrete Masonry Association and its sister production, the 8th Concrete Industries Exposition, were held at the Public Auditorium in Cleveland, Ohio, during the last week of January. Registered attendance represented an all-time high for the combined annual meeting and machinery exposition, the new figure comparing with a former peak of approximately 4,000 established at the same auditorium in 1949.

At the close of their four-day meeting the concrete masonry producers elected Sam Paturzo, of V. Paturzo Bros. & Son, Baltimore, to serve as president of N.C.M.A. for the forthcoming year. Prominent in association affairs for a number of years, Mr. Paturzo succeeds A. G. Streblow, Basalt Rock Company, Inc., as head of the organization. The group also elected the following individuals to serve five-year terms as directors: Phillip Paolella, Plasticrete Corp., Hamden, Conn.; Albert R. Waters, Carter-Waters Corp., Kansas City, Mo., and Herbert Vincent, Cinder Block, Inc., Detroit, Mich.

**A major highlight of the 33rd N.C.M.A. convention was the Concrete Industries Exposition, held in the Main Arena of the Cleveland Public Auditorium, which featured displays of 72 exhibitors.**

A splendidly planned and executed program of business and technical sessions covering a wide range of industry problems helped to make the Cleveland convention one of the most provocative and altogether successful gatherings in the 10 years since N.C.M.A. became a self-sustaining organization. In addition, of course, the occasion had the tremendous allure of a top-notch equipment exposition which jammed every foot of space in the huge main-floor arena of the Cleveland Auditorium. Over 70 of the industry's top-flight manufacturers of equipment and supplies spared neither effort nor expense to make the exposition more colorful and informative than any other in history.

Indicative of their success in this undertaking, visitors jammed the aisles of the arena throughout the four days of the exposition. All regularly scheduled association meetings terminated at one o'clock each afternoon so that producers would have an unimpaired opportunity to give the exposition the considerable time and close attention it merited. Reports from many exhibitors indicate that the affair was by no means strictly a window-shopping spree, since a considerable number of their visitors placed firm orders for major items of equipment.

Individual displays seemed in general to be more informative than in former years and at least one major equipment manufacturer used a considerable portion of its display area to demonstrate the various means by which shrinkage cracking may be controlled. Throughout the arena

Sam Paturzo (right), newly-elected president of N.C.M.A., receives congratulations from retiring president A. G. Streblow.

Above: new members of the board of directors elected during the Cleveland meeting are, left to right: Herbert Vincent, Cinder Block, Inc.; Albert R. Waters, Carter-Waters Corp., and Philip Paolella, Plasticrete Corp.

Left: we persuaded three members of the association's staff to slow down long enough for this picture to be taken. Left to right: E. W. Dienhart, executive secretary; Theodore Loba, Jr., Washington representative; and R. E. Copeland, director of engineering.

there was far more evidence than ever before of a true understanding of the importance of quality. Far more ready-mixed concrete delivery equipment was displayed than at any previous concrete masonry show, no doubt in recognition of the fact that each year more and more companies branch out into operations in both fields. Possibly in response to the block producer's growing feeling that his product needs glamorizing, a number of manufacturers displayed and demonstrated new devices for splitting block, and there were also more offerings in the general line of coating and glazing materials.

## GENERAL SESSION

**Dienhart's Report** In his annual report to the membership, E. W. Dienhart, executive secretary of N.C.M.A., expressed the firm belief that the concrete masonry industry today offers a "tremendous challenge to the young people who will soon take over from the old timers." He compared the present situation with that which existed in 1918 when his own career in the industry began. Back then, Mr. Dienhart said, the available machinery was almost unbelievably crude and there were no lightweight aggregates at all. In contrast he pointed out that today concrete masonry units are widely used in markets that were undreamed of then, and other opportunities have opened up in closely related fields that were not even in existence in the early days of the industry. As an example the speaker

Walter Wolf, Besser Mfg. Co., and Alfred Russo, Plasticrete Corp.

referred to the comparatively new development of floor and roof systems using machine made units.

Despite this generally favorable picture, Mr. Dienhart expressed concern over the industry's failure to "crack the residential market in big metropolitan centers." He expressed the belief that wider employment of half-high units, a development which he described as being as old as the industry itself, would go far toward opening wider demand in the residential field. He also referred to split rock as being among the newer developments which should help develop the residential market for concrete masonry.

**Washington Report** In his Washington report Theodore Leba, Jr., latest addition to the association's staff, outlined briefly some of the duties and functions of this still-relatively-new adjunct of N.C.M.A. activities. Mr. Leba said that an important part of his job is to keep members of the Association informed of important developments in Washington and to maintain friendly relations with the many government agencies involved in construction problems. In this connection, he called attention to the fact that some 270 national trade associations have their headquarters in the city of Washington, while others maintain representatives there.

As an example of the usefulness of Washington representation, Mr. Leba told about a recent incident involving an F.H.A. turn down on one piece masonry block chimneys because of an unfavorable test showing. In studying the test results Mr. Leba noted that flue liners were not employed. He immediately called this oversight to the attention of the proper authorities, with the result that the order was rescinded.

The speaker discussed in general terms the tremendous competition for government construction. He said that even the inclusion of concrete masonry in a basic design is no assurance whatever that the mineral will actually be used. At the conclusion of his remarks Mr. Leba expressed the hope that he would be able to render a great deal of service to all association members in Washington, and he cordially invited those who have problems connected with the national Capital to write or phone him for assistance.

**President's Message** In his message to association members, retiring president A. G. Streblow summarized briefly some of the more important activities of the organization which have been carried on during his year in office. He pointed out that at their mid-year meeting the directors of the association approved the recommendations of a special committee on finance which are expected to add approximately $25,000 of yearly income without disturbing the present dues structure.

Mr. Streblow reported that considerable work was done on the problem of encouraging wider development of regional associations. Although the problem is not by any means solved, he expressed the belief that substantial progress had been made, and he referred, by way of example, to the formal organization of a southeastern regional group late last year.

Mr. Streblow made mention of the 30 percent moisture limitation which has been adopted by the

Eleven past presidents of the association answered roll call at a luncheon honoring the new officers. Left to right, front row: Horace Bush, A. G. Streblow, Glen Barnes, and Harold Speight. Left to right, back row: Ben Wilk, Deane Lynde, Henry Buchholz, Walter Manhardt, George Katterjohn, Harve Kilmer, and John Strandberg.

Corps of Engineers, and he pointed out that within just a year many producers have adapted their operations to meet this more stringent requirement. He expressed considerable satisfaction that the industry has been able so quickly to adapt itself to a situation of this kind.

Mr. Streblow stated that block production in 1952 probably represented about the same volume as in 1951, when approximately one billion, 650 million 8-in. equivalents were marketed. With the unmistakable leveling off of the sales curve he believes that the industry is presented with a direct challenge. For the past 10 years, the speaker continued, almost the entire emphasis within the industry has been on ways and means of obtaining more production to meet demands which the industry itself had not actually created. So successful has this endeavor been that today it seems entirely probable that the productive potential of the industry is infinitely greater than actual output.

Mr. Streblow believes that it is now of the utmost importance that the attention of the entire industry be focussed upon the development of wider markets for its product. One step in this direction, he believes, would be for block producers to become their own most severe critics on problems of shrinkage cracking. In this connection he expressed the view that if concrete masonry units can be produced on as good a basis of scientific control as portland cement, a major victory will have been achieved.

The speaker pointed out that aggregates are not subject to the same rigid control as portland cement, and it therefore is necessary for the block producer to decide upon the best available material in his particular area. He believes that it is of the utmost importance that block plant operators insist upon proper aggregate grading, and that they also demand that the material meet the most exacting specifications in all other respects. He referred to the possible advantages of employing only the very best aggregate available for such important structures as schools, reserving less desirable materials for projects in which their shortcomings would not have harmful effects.

In his own company's operations in northern California Mr. Streblow recalled how much effort was put forth to adapt the available natural aggregates to the production of strong, stable masonry units. In spite of everything that could be done there was still far too much cracking of masonry walls. When a new plant was built, Mr. Streblow went on, and a stronger, lower absorption aggregate was obtained, the cracking problem disappeared almost completely. Where it was encountered at all, it was almost invariably possible to trace the difficulty to some cause other than the block itself. As a result of this experience, his company's goal is to see to it that all block are made henceforth only with the stronger, low-absorption aggregate.

C. A. Sirrine, Concrete Products Association of Michigan, with one of the prize-winning entries in a concrete masonry home design competition sponsored by his organization.

Mr. Streblow stressed the importance of always being alert to the development of new uses for concrete masonry. Many markets are still available in the field of floor systems, assembled wall systems, and in the use of concrete masonry in multi-story buildings. The necessary increased tempo of sales promotion, Mr. Streblow said in conclusion, must come from the headquarters of N.C.M.A., and in this connection he mentioned that the association is indeed fortunate in having a well-rounded staff of professionals, each thoroughly competent in his particular line of work. Although the present budget of the association is approximately $150,000 annually, Mr. Streblow pointed out that a sum far greater than this could be used effectively in promotional work alone, if the members favored such an undertaking.

**Architectural Competition** In a paper entitled *A Pattern for Promotion*, C. A. Sirrine, executive secretary, Concrete Products Association of Michigan, told in detail about a recent statewide architectural competition which his organization sponsored. Because it seems to us that the methods described could be used to excellent advantage by other alert local associations, we have obtained Mr. Sirrine's permission to abstract his paper in an early issue of *The Concrete Manufacturer*.

**Message From Canada** W. C. Coupland, president, National Concrete Products Assn. of Canada, told the meeting briefly about some of the more important recent activities of the organization he represents. He revealed that the Canadian group now has 205 members and that its entire program is maintained on a budget of approximately $6000 annually.

The Canadian block industry, Mr. Coupland pointed out, has representatives on all governmental committees concerned with building. The association last year sponsored a group insurance plan for member firms, and also worked closely with the cement industry on problems of supply and distribution. Plans are now being formulated with a view

Left to right: Haakon Paulson, Besser Mfg. Co.; D. D. Bryan, San Xavier Rock & Sand Co.; Erwin Hahn, Atlas Building Products Co.; Gene Stott, Besser Mfg. Co.; and Carl F. LeGrady, Frontier Mfg. Co.

W. P. Markert, National Concrete Masonry Assn.; F. J. Straub, Straublox-Ostrowollated; and Ralph Condo, Sr., James Condo & Son.

Deane R. Lynde, Scor-Blox Lite-Wate Aggregate Co.; Edmond Brooke, National Brick & Supply Co.; and Edward Olsen, Badger Concrete Co.

to publishing a quarterly magazine at some time in the near future.

Mr. Coupland paid special tribute to Fred Reinhold, Anchor Concrete Products, Inc., Buffalo, for the great assistance he has rendered the Canadian association in its formative period. In recognition of his services Mr. Reinhold has been made an honorary member of the organization.

In closing Mr. Coupland said that the 1953 outlook for Canadian block production is generally good, but that there is considerable likelihood of serious shortages of both portland cement and steel. He urged closer cooperation between his group and N.C.M.A. and suggested that this purpose could be achieved more readily if the Canadian industry had a representative on the board of directors of N.C.M.A.

**Panel Discussion** With William Nelson, president, Mason Contractors Association of America, acting as moderator, a six-man panel discussed various aspects of the mason problem as it affects the block industry. In introducing the subject Mr. Nelson recalled that the average age of journeyman masons was about 57 at the outset of World War II. After the war several thousand apprentices were indentured by mason contractors, while general contractors did absolutely nothing to help the situation.

For this and other reasons Mr. Nelson believes that the mason contractors deserve a preferred position. As additional evidence in support of this view he pointed out that the general contractor has little or no interest in the type of materials used in construction, while the mason contractor has a direct and valid interest in promoting the widest possible use of masonry materials.

The discussion panel was composed of the following individuals: Ralph Condo, James Condo & Sons, Somerville, N. J.; John Strandberg, Concrete Building Units Co., Kansas City, Mo.; Benjamin Wilk, Standard Building Products Co., Detroit, Mich.; and W. E. Tucker and H. E. Nemec, both mason contractors, of Richmond, Va., and Cleveland, Ohio, respectively.

As a further introduction to the discussion Mr. Condo reviewed some of the practical aspects of a plan which he has initiated to alleviate the shortage of masons. In brief the approach to the problem which he has developed consists of utilizing the facilities of public schools in an effort to develop a nucleus of young men who are interested in becoming journeyman masons. His complete program was described in an article appearing in the May, 1952, issue of THE CONCRETE MANUFACTURER.

Following Mr. Condo's talk and brief remarks by several of the other panel members, the remainder of the meeting was devoted to a question and answer period. Some of the more provocative questions and answers presented by various panel members are presented below:

William Nelson, president, Mason Contractors Assn. of America, who presided over a panel discussion on "Role of the Mason Contractor in Today's Construction Market."

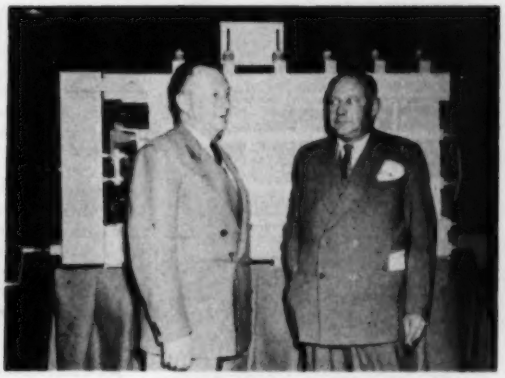
Question: How can the block industry go about recapturing the basement market which is now being taken over by the ready mixed concrete industry?

Answer: According to Mr. Dienhart cost has been an exceedingly critical factor in respect to the basement market. Where block used to cost considerably less than monolithic concrete, the situation has now been reversed due to the increased cost of placing concrete masonry units in the wall. Mr. Wilk observed that a part of the difficulty is that an average mason does not guarantee his work whereas most concrete contractors take it for granted that they must stand behind the work they do. Mr. Wilk also noted that there is a serious dearth of information as to how ot build a satisfactory basement structure with concrete masonry units.

Question: In a predominantly lumber area, what is the best way to go about promoting the use of concrete masonry units in exposed work?

Answer: Mr. Wilk suggested that the individual who asked this question come to Detroit and see concrete masonry units used in every type of structure. He asserted that basic resistance to the product has been overcome, and that the problem of wider marketing is now for the most part a problem of cost. Producers in the Detroit area, according to Mr. Wilk, are now promoting the idea of half-high units and he expressed the view that the entire industry has probably been misguided in its insistance upon an

Representing a combined total of 70 years of concrete products savoir faire: Ben Wilk, Standard Building Products Co., and Harry Emerson, Lehigh Portland Cement Co. These two veterans of the industry worked together at Universal Atlas 35 years ago.



P. M. Park, Besser Mfg. Co., and H. J. Nederhorst, a visitor from the Dutch East Indies.

8- by 8- by 16-in. standard block for exposed residential work. Mr. Condo made the suggestion that a great deal could be done to break down resistance to concrete block by building well-designed demonstration homes.

Question: What can be done about the problem of moisture penetration in basements constructed of concrete masonry units?

Answer: Mr. Tucker replied that the concrete masonry unit itself is not intended to keep out moisture. He called attention to the fact that there are a number of products on the market for waterproofing masonry walls.

Question: Does the mason need specific training for laying block?

Answer: Mr. Nelson expressed the opinion that the mason does not require any specific training for handling concrete masonry units if the material he uses is in all ways up to standard.

Question: What results have been secured from the training program conceived by Mr. Condo?

Answer: Mr. Condo replied that 31 boys have enrolled in a basic get-acquainted course. He himself will spend three days a week acting as instructor until such time as a qualified teacher can be obtained. He stated that if two qualified mechanics per year are created by the program he and all others concerned in it will have been well-rewarded for their efforts.

Question: Why is the laying rate today so much lower than it was formerly?

Answer: Nobody seemed disposed to try to handle this particular hot potato, but Mr. Nelson did make the suggestion that perhaps compensation on a piece-work basis might help the situation.

Question: Why are concrete block so carefully protected on the job while at the same time so little effort is put forth to protect concrete masonry units?

Answer: Mr. Nelson replied that no such situation appears to exist in his area, while Mr. Tucker, who apparently has had some experience with this difficulty, asserted that the delivery of block on large trailers is at least partly responsible for the trouble.

Question: Has the mason contractor a definite preference for lightweight units? Is production at a noticeably higher rate than when lightweight units are employed?

Answer: According to Mr. Nelson practically all mason contractors prefer lightweight concrete masonry units and find that their use has a beneficial effect upon production.

Question: How many masons should there be per 1000 population in the average community?

Answer: Mr. Streblow pointed out that the answer to this question would depend entirely on the kind of promotional job which block producers had done in a given area.

Joseph Mazza, Cambridge Builders Supply Co., and Paul Woodworth, The Waylite Co.

**Local Associations** At recent annual conventions of the National Concrete Masonry Association time has been allotted on the regular program schedule for brief reports from the secretaries of various state and local associations. With the considerable growth in the number of such organizations this procedure has consumed more and more time, and there has been considerable sentiment in favor of holding an entirely separate gathering. This procedure was followed for the first time at the recent Cleveland meeting, where the heads of local associations were brought together at a luncheon meeting in the Auditorium Hotel. W. P. Markert, who presided at the meeting, opened the session with some general remarks regarding the need for local associations, and he commented also on the tremendous geographical area represented by the association heads present. E. W. Dienhart, executive secretary of N.C.M.A., spoke briefly in welcoming the group, and expressed the earnest hope that all local associations in the field will depend upon the national organization for help when it is needed. A. G. Streblow, president of N.C.M.A., pointed out that the so-called grass roots associations can bring highly desirable changes to the national group even though the national association has certain unique prerogatives. We are all, he added, part of a whole, and we all seek the improvement of the industry above all other objectives.

Speaking as head of a committee which met last year to study the problem of cooperation between local associations and N.C.M.A., Phillip Paolella stated that there are certain functions which only a well-organized national association can

S. H. Westby, Portland Cement Assn., Chicago, discussed the role of his association in concrete masonry promotion.

carry out properly, but he added that it is equally evident that certain other jobs can be done best only by effective local associations. He said that the committee of which he was chairman has established certain principles which it is felt must be observed if regional and state associations are to be carried on in conjunction with the national group. One of the most important of these, he continued, is that members of regional and state organizations must also be members of the national association. The committee also endorsed the belief that if additional effort is to be put forth locally, it must be financed locally. Subject to these requirements, Mr. Paolella said in conclusion, N.C.M.A. offers every constructive assistance to local groups.

Throughout the remainder of the luncheon meeting heads of the various local associations spoke briefly on the activities of their groups. There was considerable sentiment expressed in favor of holding a separate meeting of the heads of state and regional associations at a time when there would be minimum conflict with other activities. The group voted unanimously in favor of the holding of such a meeting, and stipulated that three representatives from each organization should be invited to attend.

## ADVERTISING AND SALES PROMOTION SESSION

**Promotional Session** The Tuesday morning meeting was opened with a movie *The Magic Key* produced by the U. S. Chamber of Commerce which stressed the importance of advertising in our American way of life. It was demonstrated that real progress in civilization began only when advertising and mass production entered in and that planned economies of the past all failed because they stifled progress and imagination.

**Selling and Promotion** *40,000 Readers Can Be Wrong*, was the intriguing title of an address by W. P. Markert, director of promotion of N.C.M.A., in which he emphasized that concrete products manufacturers must awaken to the realization that the time for selling and promotion is at hand. This industry, he said, has spent comparatively little for advertising and promotion while competitive industries like lumber, wood, stone, clay and glass products have spent huge sums. The concrete masonry units industry, said Mr. Markert, has never sold facing material for homes and it now faces the possible loss of back-up sales to a new type of clay product. About 80 percent of the houses built are still of frame construction and the lumber interests continue their large-scale promotional efforts which sell lumber in spite of the many advantages of concrete masonry.

Mr. Markert emphasized that the Portland Cement Assn. is doing an excellent promotional job but that it cannot do it alone. The National Concrete Masonry Assn. and its members individually must do much more than their present efforts. What money the individual producers are now spending, he said, is not yielding the results it should because of the lack of planning and coordination. Contractors and architects must be sold on the advantages of concrete block, also the banking and loan institutions as well as the prospective home owner. The Association's budget, he said, is much too low for such a large industry and does not provide even for adequate research. He urged consideration of an increased budget which would provide for a national advertising campaign, an advertising mat kit for producers to use locally, and an adequate research program to back up these promotional efforts.

**Suggested Advertising Program** In *Let's Add Marketing to Production*, Richard Gerber, business manager, Masonry Building Magazine, outlined a proposed advertising and promotional program which would involve the use of a seal of approval similar to that of *Good Housekeeping*. This was proposed to tie in with advertising to home owners, builders, architects, etc., and with quality-controlled manufacture, research, etc. Such a program, he said, could be administered by N.C.M.A., and would require the participation of at least 150 plants averaging 1,500,000 units output.

Much discussion followed this address with some favoring such a $1,000,000 program and others a moderate expansion of the present association budget and efforts. One large producer said that his company spends 2 percent of its sales, or $35,000 annually, on advertising and promotion and that it added three salesmen last year so that ample time could be given to their training before the expected buyers' market arrived. Another pointed out

(*Continued on page 219.*)

Left to right: Sam and Jack Borin, George F. Doscher, and William and Ralph Borin. Except for Mr. Doscher, who is with The Granulite Co., all of these gentlemen represent Borin Lumber & Supply Co.

# Ready-Mixed Concrete Firm In Metropolitan Area Adds Radio Communication

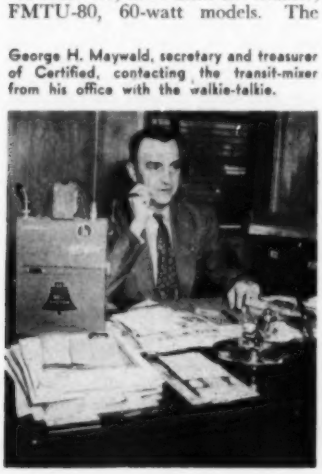
IN a business as highly competitive as ready-mixed concrete, service has come to play as nearly a vital role in successful operation as the quality of concrete. Furthermore, because ready-mixed concrete is a perishable product, it is important to

**By KENNETH A. GUTSCHICK**

have absolute co-ordination between producer and consumer. Recognizing these major facts, the operators of Certified Concrete Inc., of East Chicago, Ind., one of the largest ready-mixed concrete operations in the Chicago area, began the use of radio communications in their concrete deliveries in February, 1952, after having been licensed by the Federal Communications Commission. Presently 6 of their fleet of 34 truck mixers are equipped with industrial radios, and the company plans shortly to increase the number to 20. In addition, Certified personnel also make excellent use of two walkie-talkies as part of their radio operation.

The firm's broadcasting transmitter, which is located in the dispatcher's office, is a Motorola FSTU-140, 120-watt unit; the antenna for this transmitter is on top of the ready-mix concrete plant. Each of the six trucks is also equipped with a Motorola radio set; these units are smaller, FMTU-80, 60-watt models. The walkie-talkies mentioned above are Hallicrafter Littlefone Model HT-22 HWS units; one is used by one of the firm's executive officers and the other by the plant superintendent; these men carry the walkie-talkies with them on all daily trips. All radio equipment used by Certified is leased from the Illinois Bell Telephone Company.

George H. Maywald, secretary and treasurer of Certified, contacting the transit-mixer from his office with the walkie-talkie.



In discussing the use of these radio-dispatched truck mixers, George H. Maywald, secretary and treasurer of Certified, related various incidents which illustrated the great value of radio communication in a ready-mixed concrete operation. One such incident occurred the first day the radio system was put in use. One contractor, after nearing the end of a small pour, realized he had underestimated his concrete requirement by about 1 cu. yd. Since the job was located in a remote place which was a good distance from a telephone, the contractor expected a considerable delay before the job could be finished. However, the situation was soon remedied by the last ready-mix truck driver on the job, who radioed the plant for the additional concrete. A truck was immediately dispatched, and the concrete was at the job-site even before the contractor could have possibly phoned. The job was then finished without any costly delay, either to the contractor or the ready-mix concern.

Because of unpredictable circumstances found on a construction job like the one mentioned above, the radio performs an invaluable service. On some construction projects there may be a breakdown during the pour, or the rate of concrete placement may immediately be increased or decreased; in either case speed in notifying the ready-mix plant is of utmost importance. If the project is located far from a telephone, an obvious delay results. Then, too, transit mixers may be unavoidably delayed during the delivery, due perhaps to a breakdown or to heavy traffic or to tie-ups at railroad crossings; the latter delay is especially evident in such heavily industrialized areas as the Gary-Calumet steel district, which Certified serves. Whenever such truck delays occur, it is important that both the plant and customer are notified as soon as possible; the radio is an excellent means for this. Another use of radio communications relates to the occasional need for a concrete delivery to be diverted while the mixer is in transit; through the use of radio, the diversion can be accomplished without any delay.

A general view of the plant of Certified Concrete, Inc., East Chicago, Ind., showing the radio antenna atop the bucket elevator. A transit-mixer is being loaded at each mixer. Note the concrete walls (right foreground) used for stockpiling aggregates.

From the various examples just cited, it is clear that radio communications serve both the ready-mix plant operator and the customer. By effecting a perfect integration between producer and consumer, the radio results in speed and efficiency of operation. Savings also result to both parties concerned because daily concrete pours can be completed without any unnecessary delays.

Included in Certified's fleet of 34 transit mixers are 10 Chain Belt Rex

Merwyn Mears, superintendent, using the 120-watt broadcasting transmitter located in the dispatcher's office to contact the radio truck mixer.

4½-cu. yd. mixers (6½-cu. yd. agitators) mounted on International L-190 trucks; 10 Rex 3-cu. yd. mixers (4½-cu. yd. agitators), also mounted on International L-190 trucks; and 14 Rex 3-cu. yd. mixers mounted on Ford trucks with Thornton rear ends. All trucks are equipped with Servis recorders, which enable the ready-mix firm to verify their drivers' time reports whenever necessary. The Motorola radios are installed on six of the 4½-cu. yd. truck mixers. In actual operation the radio-dispatched trucks generally serve construction projects which are located in remote areas far from a telephone; they are also used on larger jobs where several trucks may be dispatched. In the latter case the radio trucks are generally alternated with regular truck mixers; this leaves the remaining radio trucks for other jobs. In any case the radio trucks are used wherever the maximum service can be given; the radio operation is thus extremely flexible.

Besides providing this new radio service, Certified also specializes in producing concrete tailor-made to fit the customer's requirement. Since this feature has already been described in detail in two previous articles in PIT AND QUARRY,* it will not be necessary to elaborate on this point, but rather on several notable changes that have been made in Certified's plant since publication of the 1947 article.

Although Certified still maintains high production through the operation of two central mixing units at its East Chicago plant, the company has recently replaced one of its older central mixers. Now two Chain Belt Rex 2-cu. yd. tilting-type mixers are used. A 4-cu. yd. collecting hopper has also been installed directly beneath the new Rex mixer. By means of a 70-cu. yd. three-compartment bin in one production unit and a 300-cu. yd. five-compartment bin in the other unit, Certified is readily able to produce custom-made concrete.

Storage facilities for both cement and aggregates have been greatly expanded during the last five years. The plant now has a cement storage capacity of 5,000 bbl., including one 3,000-bbl. silo and another 2,000-bbl. silo. It is now also possible for covered hopper cars and cement trailer trucks to be unloaded simultaneously. Six concrete bins also have been added; these consist of 5-ft. retaining walls set far enough apart so that each bin can hold about 100 tons of aggregate. Through the use of these bins, minor aggregates like trap rock, Waylite, slag, and pea gravel can be neatly stockpiled. The bins are located so that a crane operator can easily cast over any of the aggregates directly to the belt conveyor system, which then transfers the material to the batching plant. Certified has also acquired additional space for stockpiling No. 2 sand and gravel; the company is now able to build up huge stockpiles of materials for winter operation, when rail shipments of washed aggregates are necessarily at the minimum.

A radio-dispatched 4½-cu. yd. transit-mixing truck. Note the antenna on the truck cab roof. The radio unit is located on the cab floor.

A new fully automatic 200-hp. Combustion Engineering boiler, fired by a Williams oil burner, has also been recently installed; it is used during the winter months for heating aggregates and water in the batching plant and also for heating stockpiled aggregates. A 190-ft. materials-handling tunnel, equipped with ten feed gates, is also heated by the new boiler, thereby permitting aggregates to be easily transferred even during the coldest weather.

New rolling equipment at Certified's plant includes two Link-Belt K-300 series diesel cranes, equipped with 1½-cu. yd. clamshell buckets, which are used for transferring aggregates and for unloading gondola cars; a Hough 1½-cu. yd. Payloader, also used for transferring aggregates and for general yard use; and a ¼-cu. yd. high-lift tractor used for general cleaning operations. A newly installed National car shaker and a car puller are used in unloading aggregates from hopper cars.

Another major addition to the Certified plant is a recently-completed modern concrete testing laboratory, which is housed in a small building adjacent to the dispatcher's office. Built at a cost of about $10,000, the laboratory is fully equipped with a hydraulic press for making cylinder tests, a curing room, and facilities for determining size gradation, specific gravity, moisture content, etc., of aggregates, and moisture and air content of concrete. The laboratory was built primarily to constantly improve the quality of concrete; it also will be an important service to Certified's customers.

Executive officers of Certified include J. T. Gaither, president; Merwyn Mears, vice-president and superintendent; and George H. Maywald, secretary and treasurer. Donald Engle is the dispatcher.

*Spake, H. W.—*Big Chicagoland Ready-Mix Plant Adds Dump Truck Deliveries*, PIT AND QUARRY, July, 1947, pp. 197, 202; Avery, William M., *Custom-Made Concrete A Specialty by Plant Designed to Suit Customer*, PIT AND QUARRY, August, 1945, pp. 119-120.

## Virginia Ready-Mix School Held at Military Institute

Twenty-five operators of ready-mixed concrete plants in Virginia were students at a three-day school for concrete plant personnel held at the Virginia Military Institute, Lexington, Va., in late January.

The course, which was directed by the Civil Engineering Department of the Institute, included laboratory tests and demonstrations on the design and use of concrete mixes.

The Institute's Department of Civil Engineering has a special laboratory for concrete problems which is used in the course for practical work.

## Nebraska Pipe Plant Supplies 7-Ft. Diameter Sections

Concrete sewer pipe manufactured by the Platte Valley Cement Tile Manufacturing Company, Fremont, Nebr., for use at the re-activated Lincoln Air Base was believed to be the largest ever made of its kind—at least in Nebraska! The firm's contract called for 5-ft. sections of 84-in. inside diameter pipe totalling 2,295 ft. Also included in the order were 686 ft. of 78-in. pipe and additional quantities of smaller pipe.

Wallace Lillie, Platte Valley Cement Tile secretary-treasurer, admitted that sewer pipe does come as large as 144-in. diameter; but said that the 84-in. sections his firm turned out were probably the largest ever made in Nebraska. Each 5-ft. section weighs approximately 6 tons and contains 1,400 lineal ft. of reinforcing steel. Since the pipe has 8-in. walls, the total diameter is 100 in.

## Shute Concrete Products Shows Off New Block Maker

Open house was held at the Shute Concrete Products plant east of Richmond, Ind., on February 7, 8, and 9 in order to permit customers and visitors to witness how the firm's new Besser Vibrapac block machine turns out concrete masonry blocks.

Company personnel escorted visitors through the plant from 8 a.m. to 5 p.m. during the three-day event. Coffee was served to all comers.

According to Norman Shute, the Vibrapac turns out enough units in one day for seven full-sized home basements. From raw material to molded product requires 13 minutes.

**N.C.M.A. Convention**

(*From page* 216.)

that a number of individual firms spend 5 to 6 times as much annually on research as does the N.C.M.A. Another told of the group advertising program being started by the Wisconsin Concrete Products Assn. at an initial cost to members of 30 cents per 1,000 blocks produced.

**P. C. A.'s Role in Promotion** The Portland Cement Association's role in industry promotion was described by Sig H. Westby, manager of the Housing and Cement Products Bureau. In the old days, the use of concrete masonry units was severely limited by code requirements. He told how the P.C.A., the American Concrete Institute and the old concrete products association instigated fire tests and how after four years of effort concrete blocks got the same fire rating as clay products. It also took a major effort to bring concrete blocks out of the basement. Other things which also had to be proved, said Mr. Westby, were load-bearing capacity and other structural requirements, rain penetration, etc.

Mr. Westby said that the chief aim of the P.C.A. is to extend the use of cement and concrete in every possible way. There are 27 district offices with 150 field engineers available for advice and information. Technical and promotional literature is provided free to all interested in the use of concrete and through advertising in national magazines, etc., and in other ways the P.C.A. promotes concrete. Producers of concrete products are given all possible help through the Cement Products Bureau and are urged to avail themselves of it. He told of laboratory projects under way and promotional work planned. In every way possible the P.C.A. helps to create demand for concrete products but the producer must do the actual selling. In closing Mr. Westby urged producers to build up and train sales staffs now while business is good.

**Advertising and Editorial Techniques** Successful advertising and editorial techniques in the construction field were described by Richard Jones, advertising manager of *House and Home* magazine. He pointed out that in 1952 building passed agriculture as the leading industry in this country, having already been ahead of the steel, transportation, coal, automobile, chemical and other industries in dollar value, employment, etc. It is now a 43 billion industry. Building prospects continue to be good, in spite of the drop in private housing which is due to a sharp drop in new family formations resulting from the low birth rate during the depression 20 years ago. This effect will, he said, be felt for several years to come.

No other major industry, said Mr. Jones, has experienced such a revolution as the building industry in the last 20 years. It has gone from the modernistic stage into the modern which is now called the contemporary. Among the developments he included modular coordination, standardization, and the rehabilitation of blighted areas. Schools, he said, have led the way in this revolution in the use of concrete block and brick and he mentioned many other outstanding projects of various types which have set examples for the future. Each of these projects has helped to sell the use of concrete block in others, and other concrete products such as slabs, prefabricated panels, etc., have made possible savings in cost and new architectural effects.

Houses, said Mr. Jones, are becoming fashion products. The dining room began to disappear 10 years ago, then the kitchens, and now the kitchen, living and dining areas are all one. The garage is now connected to the house and is replacing the basement as a workshop, play space and storage area. He advised the industry to study the effect of air conditioning on the use of concrete masonry units in houses as year-round air conditioning is now taking over. The concrete products industry, he said, must create as well as supply markets A broad program of promotion should be followed on a national as well as a local scale. This program must be creative and take into consideration the revolution in building styles. In closing he said that advertising should not be expected to show immediate results.

Richard N. Jones, advertising manager, House and Home Magazine, spoke on "Successful Advertising and Editorial Techniques in the Construction Field".

## TECHNICAL SESSION

**Copeland's Report** In opening the technical session which was held on Wednesday, January 28, Paul Bronson, chairman of the meeting, explained briefly some of the functions of the technical problems committee. He also announced that Neil Christy, Marietta Concrete Corp., had been elected chairman of that important association committee.

Mr. Copeland's report was in the

Left to right: Thomas G. Rogers, Multiplex Concrete Co., Inc.; Hardy Magrath, Lehigh Portland Cement Co.; W. R. Ireland, Atlantic Aggregate Co.; and J. H. McDonald, Penn-Dixie Cement Corp.

form of a brief summary of various recent technical developments of interest to the block industry. Among these, he gave prominent position to the performance of reinforced concrete masonry structures in the Tehachapi earthquake. The speaker pointed out that in the second most severe earthquake shock ever recorded concrete masonry structures came through with flying colors, and he expressed the opinion that this fact has vast implications for the possible uses of concrete masonry units and steel reinforcing in an atomic age.

Mr. Copeland also commented on the considerable increase of facilities for the manufacture of lightweight aggregates. He noted that last year four new plants were constructed for the production of expanded clay and shale aggregates, and that there was similar activity in the construction of sintering plants. He commented that in spite of a sizable increase in the capacity of the over-all lightweight aggregate industry, demand still remains high and there are still areas in which the supply is short.

The speaker also noted that in recent months there had been a great increase in the efforts of block producers to install facilities for drying their product. He pointed out the more stringent moisture limitation specifications of the Corps of Engineers as being an important factor in this development, but he also noted that architects and private builders can and do often set even more stringent requirements. In this connection, Mr. Copeland referred to the increased interest in high-pressure steam curing as a means of meeting even the most exacting specifications, and he revealed that at least two or three prominent block producers are planning to install such systems some time this year.

Referring to an association technical report on the subject of admixtures, the speaker pointed out that many producers are using fly ash as a replacement for 20 to 25 percent of normal portland cement requirements in their mixes. He expressed the opinion that the possibilities of this practice are well worth looking into wherever there is an adequate supply of fly ash.

In the remainder of his report, Mr. Copeland summarized briefly the contents of a number of recent technical bulletins sent out to association members. He also referred to the research which will be undertaken at the University of Wisconsin on fundamental factors involved in the design of reinforced concrete masonry structural members. In this work he said it is proposed to study such factors as bond, unity of action of component materials, and the effect of workmanship. He added that the association also plans to make available additional technical information regarding various methods of artificial drying to meet the 30 percent moisture limitation.

There is need, Mr. Copeland said in conclusion, for more thorough study of details for concrete masonry construction. It is his belief that much of the cracking attributed to volume change of block is actually due to poor details and construction practices. He also pointed out that a need exists for careful study of resistance of concrete masonry walls to horizontal loads.

**Tehachapi Earthquake** E. A. Peterson, Rocklite Products, Ventura, California, reported to the meeting on the performance of reinforced concrete masonry in the Tehachapi earthquake, which he described as being the strongest since the 1906 quake at San Francisco. The recent Tehachapi quake, according to the speaker, had a magnitude of 7.5 compared with 8.1 in the case of the San Francisco quake.

Mr. Peterson pointed out that structural damage in the recent quake was quite severe within a radius of 30 miles from Tehachapi, which is itself only a few miles distance from the fault line. He said that reinforced concrete masonry structures stood up extremely well throughout the quake area and he contrasted their performance with that of unreinforced brick masonry laid-in-lime mortar. The latter type of construction, especially in buildings 20 to 25 years old, showed the most failures. Among factors which Mr. Peterson said appeared to have a considerable influence on the showing of various structures were the following: the weight of the structures appeared to have a direct relationship to the amount of damage sustained—*i.e.* lightweight block buildings came off better than structures built of heavyweight block; ties between roofs and walls seemed to have an important bearing, as did also the use of ties between second-floor levels and walls.

Mr. Peterson showed photographic slides to illustrate the extent and type of damage sustained by structures built of various materials. He asserted that the block industry has every reason to feel proud of the performance of its product under such severe punishment. In closing he pointed out that the initial Tehachapi quake was so severe that it was extremely difficult for anyone to remain on his feet.

**Mechanical Unloading** In a paper entitled *Evaluating Mechanical Unloading of Block From Delivery Trucks,* George Ko-

Left to right: R. D. Johnson, W. C. Hart, and Neil Christy, all of Marietta Concrete Corp.

S. Carl Smithwick, Smithwick Concrete Products Co.; John K. Selden, University of Toledo; and Frank G. Erskine, Expanded Shale Institute.

gel, The Cincrete Corp., N. Y., asserted that delivery costs for concrete masonry run considerably higher than for most materials. He also pointed out that delivery costs are extremely high in relationship to the total cost of the product, which he described as having considerable bulk and relatively little value.

A one-machine plant, the speaker pointed out, handles approximately 120 tons of material per day in producing approximately 6,000 standard masonry units. He mentioned that his own company last year moved well over 20 million tons of material. According to Mr. Kogel delivery costs for an average plant may be as much as double the cost of all plant maintenance, and in extreme cases such costs may equal the total cost of plant labor. In view of this he finds it surprising that there has been so much emphasis on technical developments in connection with production, while so little attention has been given to developing more efficient methods of delivering the product. He recognizes, however, that the problem presents a great many serious difficulties, inasmuch as poor conditions at unloading points can promptly cancel out any savings which may be accomplished at the point of production.

As points in favor of mechanical loading Mr. Kogel noted that one considerable advantage is the ability of the driver to take care of unloading without regard to the weather or special personnel being available for the purpose. He also pointed out that some types of mechanical unloading result in less breakage and chipping of corners, and that there is also less likelihood of injury to employees.

The speaker noted that extremely long hauls tend to nullify the savings which may be achieved with mechanical unloading and he suggested that this problem deserves more careful investigation. At the present stage of development he believes that it is wise to use mechanical unloaders only on relatively short hauls, and fall back on traditional hand-loading methods for distant deliveries.

The speaker used motion pictures to demonstrate several types of mechanical unloading devices now in use. The two primary types illustrated were the overhead beam design originated by Atlas Lime Co., El Paso, Texas, and the dump-type exemplified by the equipment of Arthur Rehberger & Sons, Inc.

**Reduction of Laying Costs**

Herbert Vincent, Cinder Block, Inc., Detroit, discussed in general terms the problem which the block industry now faces in connection with the cost of placing its product in structures. He pointed out that a quarter of a century ago, when labor cost about as much as the material itself, the industry had no such problem. Present day prices of concrete masonry units, the speaker said, are up an average of about 10 percent over the prices that prevailed in 1927, but in the same period laying costs have approximately doubled. He contrasted the small price increase of concrete masonry units with the relatively much larger increases which apply to most competing masonry materials, some of which have risen as much as 100 percent.

Mr. Vincent listed the following procedures which in the opinion of journeymen masons would do a great deal to reduce laying costs: provide light, true units; provide space on the job for the segregation of units of various sizes; pile units bed-side down on the job; provide scaffolds at least 5 ft. wide; have a power masonry saw available on every job; see that mortar is kept in a plastic condition at all times, and that a laborer is provided for this purpose; elevate mortar boards 18-in. above scaffolds; have competent masons lay out all work to be done; have door bucks set in place when the first course of masonry is laid; see that each mason has at least 5 ft. of clear space on each side; have all holes in mortar joints tooled as completed; keep stored units covered until they are used.

Mr. Vincent pointed out that the cost of concrete masonry gives it an enviable and favorable position, but he stressed the importance of maintaining the highest quality standards. This, he continued, can have a very direct bearing upon laying costs, since in extreme cases a good masonry unit can be layed for as much as 5 cents less than a heavy, poorly-made unit. He believes that the block industry has a big selling job to do, that it must assist architects to the utmost, that it must learn to cooperate fully with local mason contractors and unions, that it must adopt the practice of furnishing shop drawings and maximum job assistance, and that modular coordination must proceed at a more rapid pace.

At the close of his talk, Mr. Vincent showed pictorial slides illustrating a mechanical unloading procedure used by his company. He pointed out that 90 percent of his firm's output is used in exposed concrete masonry walls and that handling and storage are correspondingly of greater importance than might be the case with some companies. Pictures showed single trailers loaded with as much as 1400 8-in. units placed on wooden pallets. The speaker said that as often as possible

Henry Nagy, Melroy Wehr, and Arthur Hintz, all of West Allis Concrete Products Co.

Left to right: J. Ray Jenkins, The Jenkins-Essex Co.; R. R. Niehaus, Besser Mfg. Co.; and Doug Williams and William A. Mattingly, Jr., both of Katterjohn Concrete Products Co.

delivery trucks bring back a load of pallets after each trip.

**Prestressed Masonry** A report on the utilization of prestressed concrete masonry for structural frames, floors and roofs was presented by Ross H. Bryan of the consulting engineering firm of Bryan and Dozier, Nashville, Tenn. This speaker addressed the convention two years ago, at which time his company had just completed the construction of a stadium and a highway bridge involving prestressed members which utilized machine-made concrete masonry units. These structures, according to Mr. Bryan, have proved entirely sound, but the design and construction method are now obsolete, and the modified mold boxes used in producing the masonry units have been discarded.

Mr. Bryar. reported that since entering the prestressing field his company has built 35 structures in seven states and has developed specially designed molds to cover the entire field of concrete structures. Bonded strands have been employed exclusively in recent jobs, and all their work is now done by the plant fabrication technique. Where the early jobs used simple spans exclusively, more recent projects have incorporated continuous spans. Costs are now lower, Mr. Bryan continued, due to the economy of assembly-line procedures in the plant, and it is now also possible to figure work of this type within very narrow limits.

Cedric Willson, Texas Industries, Inc., Dallas, presided at an expanded shale aggregate meeting and also spoke on the "Fundamentals of Making High Quality Concrete Masonry Units".

Willis E. Gifford, Builders Co., and E. N. Leigh, Lake Shore Cement Products Co.

Other advantages of plant fabrication, according to the speaker, are better general quality of workmanship. better supervision, and the elimination of the elements of chance inherent in field lubrication. In the opinion of Mr. Bryan too few contractors have the experience necessary to make field fabrication practical.

Acceptance of prestressed concrete is by no means an automatic affair, Mr. Bryan pointed out, for all work of this type must be obtained in competition with more conventional types of construction. He showed slides which illustrated some of the structures his company has designed and built, and he called attention to the fact that each of the projects was awarded on a strict cost basis alone. In closing he expressed the view that the possibilities of prestressed, plant-fabricated concrete masonry have only been scratched to date, and he predicted that vast progress will be made in the years just ahead.

## PLANT AND PRODUCTION PROBLEMS SESSION

**High Quality Masonry** Cedric Willson (Texas Industries, Inc., Dallas, Texas) spoke on *Fundamentals of Making High Quality Concrete Masonry Units*. He said that the concrete masonry industry is fortunate in having one of the largest accumulations of data on all its problems of any industry and in having it all available to any producer at no cost. There is, therefore, no excuse for any manufacturer not knowing all the fundamentals of making high quality concrete blocks. Many, he said, are too close to the woods to see the trees and a few others are still not sold on the necessity for and advantages of control and quality. Such producers hurt the entire industry.

Mr. Willson described the three basic operations in block manufacture—mixing the concrete, making the unit, and curing. In designing a mix he said that until a few years ago curing received the most attention and the others were slighted. Now it is recognized that all three are necessary for a high quality product and the future of the industry depends largely on the production of quality blocks by all its members. A high quality product must meet A.S.T.M. specifications and be uniform from any one plant in quality, strength, appearance, etc. (This paper was such a complete yet concise discussion of this all-important subject that we have arranged for its publication in full in an early issue of the Concrete Manufacturer —The Editor.)

**Operating Problems** The plant and production problems session attracted a capacity attendance and all present were well repaid for their time and trouble. Members of the association had been invited to submit questions which they would like to have answered and 63 of these were listed. The limited time made it possible to discuss only 25 of these questions but they were among the most important ones. Jay C. Ehle as moderator, did an outstanding job as did also the panel of experts, consisting of Edmund H. Brooke, E. W. Dienhart Jr., G. M. Neff, O. Neil Olson, Alfred Paolella, Thomas G. Rogers, R. A. Utiger, Cedric Willson and Paul M. Woodworth. Questions were assigned as far as possible to

Ross H. Bryan, Bryan and Dozier, Consulting Engineers, Nashville, Tenn., discussed the use of prestressed concrete masonry in building construction.

those best qualified to answer them, but others not on the panel were also called on. Time was allowed for discussion from the audience.

*Question*—What are recommended methods for thawing frozen aggregate in railroad cars, stockpiles or bins?

*Answer*—Mr. Utiger told of his experience with hopper cars of soaked cinders which had frozen solid. Holes were drilled in the mass and it was broken down with dynamite into chunks small enough to pass through the unloading gates. The old pick and shovel method had required hours of labor at a cost of about $25 per car. The blasting method took only 35 minutes and cost much less. Mr. Utiger warned, however, that only men familiar with explosives should do this job.

Mr. Dienhart recommended putting a canvas over the top of the car and putting two oil burners under the gates. This took all day but cost only about $8 and was cheaper and quicker than with steam. He urged care so that the canvas would not catch fire.

Mr. Ehle described a method for use on bins having steam coils. Oil was heated to 500-600 deg. F. in a boiler or auxiliary heating system and circulated through the pipes in place of steam. An advantage was the lack of condensation or deterioration of the pipes.

*Question*—What is the recommended gradation for lightweight aggregate for use in block mixes?

*Answer*—Mr. Woodworth said that this depended on the texture desired and the particular aggregate used. For medium texture a fineness modulus of about 3.75 was recommended. In this connection, Mr. Olson commented that most producers could benefit by watching their sources of aggregates more closely.

*Question*—What are the best and most economical methods of preventing cement buildup on pallets and of cleaning them, and how often should they be cleaned?

*Answer*—Mr. Rogers said that the use of a pallet oiler gave trouble so his company bought a pallet cleaner and cleans each pallet once a year. He said that such cleaners can also be rented and that there is a service available which will bring in a machine and clean the pallets periodically.

*Question*—What type of coating has proven most effective in preventing corrosion of steel racks used with high-temperature, low-pressure steam curing?

*Answer*—Mr. Neff said that he had tried many methods but they were all too expensive and laborious and he had found no satisfactory coatings. He finally built a watertight pit and filled it with used crankcase oil. The racks were soaked in this and then cleaned. The cost was not over 40 cents per rack and this had to be done only three times a year. He advised leaving the rust on the rack as this retains oil.

*Question*—Are admixtures such as Darex, pozzolans, fly-ash, etc., commonly used in the production of lightweight block?

*Answer*—Mr. Paolella said that his company replaces 25 percent of the cement with fly-ash without reduction of strength and with an increase in plasticity and fewer cracked blocks. The denser blocks obtained also reduced absorption. The use of 2 oz. of Darex per bag of cement also lowered the number of cracked blocks.

*Question*—Is the use of high-early-strength cement recommended, and if so when and how should it be used and what are the effects?

*Answer*—Mr. Paolella said that tests over a long period showed that the use of high-early-strength cement does not increase costs. If 20 blocks are obtained per bag of standard portland cement 24 to 25 can be obtained from high early and they will be stronger and better blocks with less cracking, etc.

*Question*—What are the advantages and disadvantages of a unit supplying heated, humidified air to the kiln, as compared to a conventional steam boiler system when used to cure block?

*Answer*—Mr. Willson said that the saving in space is important to many producers, especially when an installation is made in a plant not designed for such methods. He said that the higher efficiency is also important where fuel costs are high. On the other hand such a system is more complicated to control and the automatic features sometimes get out of order.

*Question*—What is the maximum temperature recommended for curing block with low-pressure steam at a pressure of 12 p.s.i. and what holding and steam-on periods are recommended?

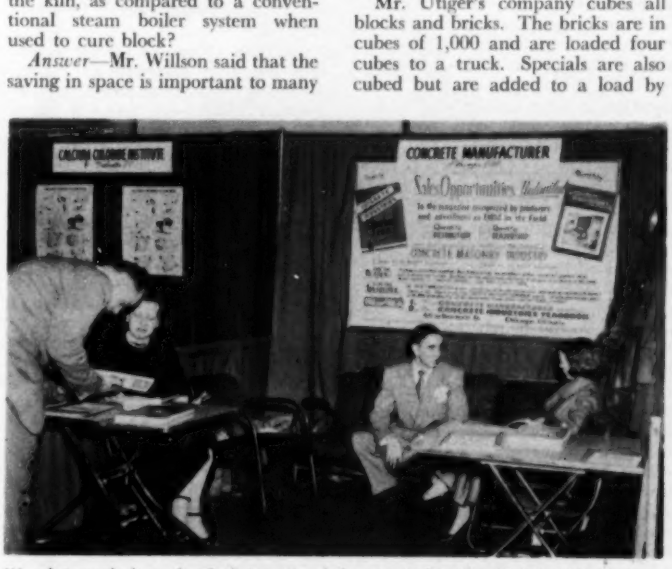
*Answer*—Mr. Woodworth recommended 180 to 190 deg. F. with a steam-on rate of 50 to 60 deg. F. per hour and a holding period of 1 to 2 hours.

*Question*—What is the most economical and practical method of cubing block by hand, with the aid of a cubing hoist, or other mechanical means, and is it economically feasible to cube all sizes of blocks?

*Answer*—Mr. Paolella cubes all blocks and with the smaller sizes uses metal straps to hold them in place. Only three straps are used as the yard is paved, otherwise more would be necessary. The total cost for labor and materials is about 21 cents per cube.

Sam Paturzo's company cubes all blocks but no straps are necessary as trucks are loaded by hand. Bricks are not cubed but are handled by a front end loader loaded by hand. The bricks are dumped into piles.

Mr. Utiger's company cubes all blocks and bricks. The bricks are in cubes of 1,000 and are loaded four cubes to a truck. Specials are also cubed but are added to a load by




We photographed our booth during one of the rare traffic lulls. At left Edith Carberry answers a visitor's question while our central advertising manager, Charles Bussmann, gives his undivided attention to Mrs. Bussmann.

hand. Cubes are stacked four high in the yard but only the cube that goes on top is banded.

Ben Wilk's company has eliminated lost time in the yard by providing each man with a platform truck. Each man takes a rack to the yard, unloads it and returns the rack. This is faster and cheaper than when men had to wait between trucks but, he stated, the company plans to go to cubing.

*Question* — What methods have proven practical in clearing snow from storage yard areas?

*Answer*—Mr. Utiger advised cubing all blocks and keeping wide enough aisles for the passage of a front-end loader. After a snow, men clean off the tops of the piles, and the loader then cleans out the aisles. The loader should be kept coated with oil to prevent snow and ice from sticking to it.

*Question*—What is the best method of producing lintels with a texture similar to the block, using the same type aggregate for both?

*Answer*—According to Mr. Willson it is only necessary to use the same mix as for the blocks and carefully control the amount of mixing water used. He said that in a lintel machine there is more vibration and of a different type so a slightly drier mix should be used. With a handmade form and little or no vibration the mix should be slightly wetter than a block mix. The lintel must then be given the same curing cycle as the block.

Several others expressed their preference for lintel blocks tied to continuous bands around the building, especially in earthquake areas. With this type of lintel texture is no problem.

*Question*—What are some of the incentive pay systems and how successful have they proven?

*Answer*—Mr. Neff's company has used the incentive pay system for seven years with excellent results. A quota was set up for a day's production of blocks and pipe. When this quota is reached they get not only their regular pay for 8 hours but also a bonus of 25 cents per hour. Some days the quota is reached in 7 hours or less. This system has nearly eliminated the need for supervision as there is excellent morale and laggards are not tolerated by the others in a crew. It was pointed out that the quota set must be fair to both workers and producer. The men were skeptical at first but soon became completely sold on the idea. Production averaged higher and absenteeism lower than before.

Others pointed out that the same plan must apply to all men in a crew. In one plant the yard men also get bonuses after their first year of employment, and a higher bonus after two years. The yard men have lower wage rates than the plant crew but get more overtime. The capacity of the block machine is to be increased and the benefits will be split with the workers.

Another producer uses the same system for all employees, including

P. E. Bohm, Sr., Concrete Products Corp., and Lawrence Condrey, Pre-Cast Concrete Products, Inc.

truck drivers. Some trucks are hired so that costs can be determined and the quota for drivers of company-owned trucks is based on this. The drivers get one-third of any earnings over the quota.

*Question*—How can manpower be allocated most efficiently in plants producing a variety of products such as block, pipe, lintels and sills, floor systems, etc?

*Answer*—According to Mr. Brooke one advantage of diversification is in the flexibility of labor. Men are switched from one operation to another and the union does not object.

*Question*—What is considered a high accident frequency rate for a plant hiring 100 employees and what value does an accident prevention program have in reducing employment compensation and other insurance rates?

*Answer*—Mr. Brooke said that 10 accidents per year among 100 men is considered poor and two accidents excellent in Wisconsin where rates are based on the second preceding year. Most insurance companies give credit for a good record so safety pays off financially as well as in other ways.

*Question*—How can wet, crushed cinders or other lightweight aggregates be prevented from blinding screens?

*Answer*—Mr. Willson said that the electric heating of screens is a big help. Mr. Utiger said that in processing cinders they are submerged in a lime solution to eliminate staining, etc. An electrically-heated screen is followed by one which has rubber balls under fine screen cloth to prevent blinding.

*Question*—What way, means and methods should be considered when establishing a preventive maintenance program on equipment?

*Answer*—Mr. Rogers described a regular program of lubrication and inspection followed in his plant. In addition all machinery and equipment is repaired annually and all bushings, bearings, pins, etc., which look questionable are replaced. This work is done in winter and saves much down time during the operating season. A complete stock of parts is also kept on hand and there is a well-equipped maintenance shop. When a program of this kind is set up the employees respond by doing their share.

*Question* — What is the recommended operating speed of a batch mixer; can it be increased to increase capacity, and if so, how much?

*Answer*—Mr. Dienhart said that a speed of 20 r.p.m. is usually recommended with a mixing time of 5 to 6 minutes. By speeding up the mixer to 28 r.p.m. the mixing time was cut to 4 minutes but the mass of concrete resulting gave only 85 percent of the number of blocks.

*Question*—How can bent plain steel pallets be straightened?

*Answer*—Mr. Olson said that pallets are cleaned and then bundled for efficient handling. They are then heated in the furnace and hot pressed in bundles. Mr. Brooke sends them to a machine shop where they are rolled at a cost of 75 cents each. Mr. Paolella uses pipe wire rolls to do the job.

## AGGREGATE GROUP MEETINGS

**Pumice Meeting** Otto Buehner, Buehner Block Co., Salt Lake City, Utah, presided over a special meeting for producers interested in pumice aggregate. The following general statements were made with regard to the use and performance of pumice aggregate in lightweight concrete masonry units:

Pumice like other lightweight aggregate has a shrinkage drying problem, which is somewhat aggravated because the material itself does not dry as readily as some other aggre-

gates. The use of bond beams at lintel height and occasionally at sill height will appreciably reduce trouble as a result of shrinkage drying. It was also pointed out that blocks made with pumice and water alone (without portland cement) show virtually no shrinkage at all in going from the wet to the dry stage.

Other general suggestions as to how to minimize the shrinkage of pumice blocks included the following: Make specification units and cure them properly, then dry them as completely as possible to insure minimum shrinkage;. make maximum use of fine pumice and presaturate the aggregate before adding portland cement; also be sure to use sufficient water both in the mix and curing. It was also suggested that holding units for 28 days before making delivery would materially help the shrinkage problem.

It was brought out clearly that all concrete walls undergo a certain amount of movement and that this problem is not materially different in the case of pumice units. There was a good deal of discussion of the possible effect of temperature movement, but it was pointed out that in all cases the major movement is a result of moisture changes. It was said by way of summary that there is great need for the development of a standard specification for those desiring to use pumice aggregate, and that far more information must be gathered concerning the size and gradation of the material, the optimum amount of mix water and similar factors.

**Natural Aggregate Meeting** The Natural Aggregate Meeting was presided over by Benjamin Wilk (Standard Bldg. Products Co., Detroit, Mich.), who has achieved an enviable reputation for the efficient and economical manufacture of concrete blocks with sand and gravel. He described in detail the procedures followed by his company which make possible a yield of 40 to 42 standard blocks, meeting all specifications, per sack of high-early-strength cement. The first requirement, said Mr. Wilk, is a well-graded aggregate with a fineness modulus of about 3.75. A typical mix contains 2510 lb. of pea gravel, 1710 lb. of coarse sand, 805 lb. of fine sand, 305 lb. of high-early-strength cement and 11 gal. of water. He stressed the importance of sufficient fines. The blocks made are 8-in. modular 3-core units weighing 38 lb.

In answer to a question Mr. Wilk said that any block with a compressive strength of 1000 lb. or over must necessarily have low absorption. He also pointed out that every producer must test his own aggregates and concrete to arrive at a proper mix. It is also important to adjust the amount of water by the action of the concrete in the block machine rather than in the mixer. A simple test is to take a handful of concrete and make a ball of it; if it disintegrates the mix is deficient in fines. Using a 50-cu. ft. mixer he finds that mixing over 5 min. does no good. The first 2 min. of mixing is done dry. High-early-strength cement is used because it saves cement and curing time and there is less breakage in handling and storing.

Mr. Wilk also recommends holding the blocks in the kiln for two hours before turning on the steam. The steam is then left on until the kiln temperature reaches 160 deg. F. when it is turned off, allowing the blocks to soak. After 12 hours the kiln is blown out and then closed again. Blowing for 45 min. is enough to dry the blocks and get all the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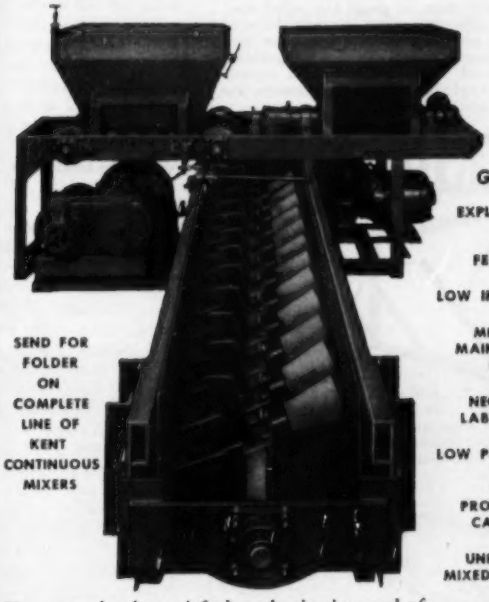

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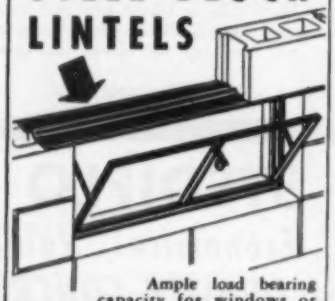

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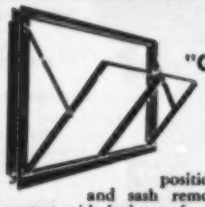

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water out of the cores. The thermometer is outside with its thermocouple 20 ft. inside the 65-ft. kiln and below the level of the top of the rack. There is one steam pipe in the top center of the front end of the kiln and pointing toward the back. With a 1¼-in. pipe and 10 lb. pressure at the boiler the steam has enough velocity to come back from the other end of the kiln and create enough turbulence to do a uniform job of curing. He explained that the temperature required in the kiln would vary with the outside temperature and other conditions. With lightweight blocks about 10 deg. more heat is required than for sand and gravel blocks. He also warned against raising the temperature at a rate over 60 deg. per hour to insure against crazing.

One problem brought up was that of the bottom row of blocks in a cube freezing to the ground in winter and breaking when the cube is lifted. A Minnesota producer said that he saves up cull blocks during the warm season and lays them out in the storage area, placing the cubes on top of them. When the cubes are later lifted off the cull blocks are smashed and removed so that the lift trucks can get at the next pile.

**Waylite-Superock Meeting** The Waylite and Superock aggregate meetings on Tuesday afternoon were combined because of the similarity of their problems. Lawrence Condrey (Concrete Joist & Products, Inc., Chicago Heights, Ill.), presided, along with Paul Woodworth and Walter Warren of Waylite and Carrol Strohm (Nashville Breeko Block & Tile, Nashville, Tenn.)

Mr. Woodworth said that the output of Waylite will be greater in 1953 as the 1952 output was held down to 1,200,000 cu. yd. by the 2-month steel strike. He described the advertising program of his company and booklets which will stress texture and appearance to popularize exposed use. He also said that Waylite blocks are getting much of the new school business and that if half blocks were available at a reasonable price more of the small home business could be obtained.

It was announced that a contract had been signed with the U. S. Steel Co. for a new plant to be built at Youngstown, Ohio. This, said Mr. Warren, should make it possible to supply not only present customers but also some producers whom it had not been possible to supply in the past. This in spite of the fact that productive capacity of current customers in the East is being ex-

The advertisement on the right hand page, addressed to architects and engineers, appears in Architectural Record, Engineering News-Record, Western Construction and Southwest Builder.

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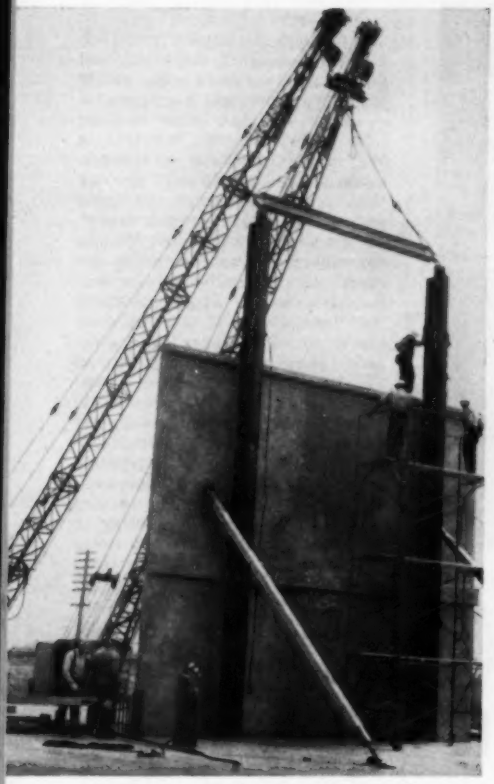

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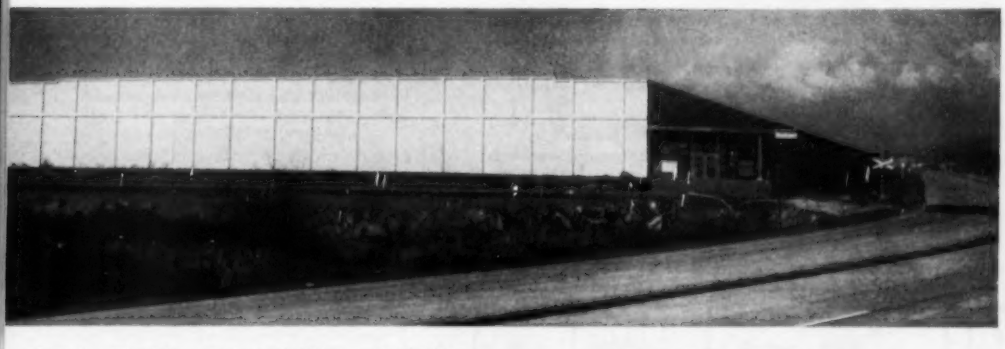

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panded about 50 percent.

A question and answer period followed in which it developed that there is some variation in the weight of finished lightweight slag aggregate due to the variation in the raw slag from various sources, but that in Waylite this variation is within a range of plus or minus 10 percent. With respect to sound absorption and transmission, results of tests were quoted which showed that Waylite blocks were at least as good as any other material available at equivalent cost. As for yield it was stated that from 20 to 22 standard 8-in. blocks are obtained per sack of cement—these being 700-lb. minimum "B" blocks which are the only type recommended as Waylite blocks made for higher strengths lose most of their thermal and acoustical advantages. Several producers reported that, using air entraining admixtures with high-early-strength cement, they increased their yield from 20 up to 29 blocks per sack without losing the above strength and other characteristics.

**Expanded Shale Meeting** The meeting for producers and users of expanded shale aggregates was held Wednesday afternoon and was presided over by Cedric Willson (Texas Industries, Inc., Dallas, Tex.). He opened the meeting by stating that a block made from this product has every desirable characteristic that a light-weight aggregate block should have, including resistance to fire and freezing and thawing, insulating value, economy of manufacture, lightness of weight, etc.

E. A. Peterson (Rocklite Products, Ventura, Calif.) told of the use of his company's aggregate in the spectacular new Statler Hotel in Los Angeles. This contract was preceded by 2½ years of work in proving to architects that this aggregate had the necessary strength, elasticity, etc., for this job where earthquake resistance is highly important. The use of Rocklite, he said, saved 15 percent in steel and one-third in the weight of concrete. This building stood up very well during last year's earthquakes. It was pointed out that expanded shale aggregate is 32 years old with a wealth of tests and performance data in back of it.

Segregation, said Mr. Willson, is a major problem with all lightweight aggregates but one that is easily solved. Using two sizes of aggregates —fine and coarse—helps, and he told of his method of rescreening fines into two sizes and later recombining all three. The use of high, narrow bins was also advised to combat segregation.

James J. Mennis (Prestressing, Inc., San Antonio, Tex.) said that the plastic flow of lightweight aggregate concrete has been cited as a reason why it can't be used successfully in prestressed concrete members. The minimum compressive strength requirement is usually 4,500 lb. in 28 days. He told how his company, in cooperation with Carter-Waters Corp., tested such flow loss and said that final result data will soon be available. He said that the flow loss will apparently not be excessive and that it should be possible to give engineers, architects, etc., definite percentages of loss to be used in their calculations. With such data available Mr. Benson believes that the future of lightweight aggregates is unlimited.

Robin C. Walker (Carter-Waters Corp., Kansas City, Mo.) urged cooperation by all producers of expanded shale aggregates in getting Underwriters Laboratories' approval and ratings for expanded shale aggregates, stating that the Expanded Shale Institute is now arranging for fire resistance tests of concrete masonry and mass concrete. In the meantime, he advised, a waiver of these specifications can be obtained by working through the local branches of the U. S. Corps of Engineers.

According to A. G. Streblow (Basalt Rock Co., Napa, Calif.), expanded shale aggregates automatically get a 4-hour fire rating if an extra thick wall is used. Standard blocks are also acceptable if the cells are filled with sand or other material to eliminate convection.

### Uniform Contract Urged For Municipal Construction

A national joint committee of the American Public Works Association and The Associated General Contractors of America has recommended the use of a uniform contract for municipal engineering construction projects (excluding building construction) in municipalities throughout the country.

The newly-formed committee, at its first meeting in Chicago on January 28, agreed that one should be prepared and submitted to its parent associations for their approval. It further agreed that the *Suggested Form of Contract for Engineering Projects,* 1952 edition, prepared jointly by the American Society of Civil Engineers and the A.G.C., should be studied by the committee and "consideration given to adapting it for use by municipalities".

The committee, which was set up in October, 1952, at the invitation of A. S. Horner, of Denver, president of the A.G.C., has as its purpose the consideration of matters in municipal construction of interest to municipal and general contractors, public works officials and others.

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# Botched Batches

### Busy Beaver

THE cement shortage continues to make news of a sort. An energetic thief drove his own truck and trailer up to a Santa Fe boxcar at a siding in Dallas and began tossing out 94-lb. sacks of cement as though his life depended on it. Two railroad detectives admired his activities for about ten minutes, and then made the pinch.

In ten minutes the busy gent had unloaded 86 sacks, or 8,084 lb., of cement. This is equivalent to 516 sacks per hour, or about five times the average hourly rate for men hired to do the same work. If those dumb detectives had let the fellow alone for a few hours, he would probably have earned enough to pay his fine and set himself up in business.

### Speed Up

SOMEBODY with a good deal of spare time on his hands has worked out comparative figures on the man-hours per cu. yd. required to build the Great Pyramid of Cheops and the Grand Coulee Dam. According to this unidentified authority, the 3,000,000 cu. yd. of masonry which comprises the pyramid represents about 400 man-hours of labor per cu. yd., compared with about 3 man-hours per cu. yd. for the 10,500,000 cu. yd. of concrete in the dam.

The business agents of several well-known unions are going to raise merry hell with somebody when these facts are brought to their attention. It just goes to show what can happen when there's a slave-labor law like the Taft-Hartley Act kicking around.

### Ask a Silny Question

A READER wants to know whether or not the "n" in kiln is entirely silent. We can think of no more conclusive a reply than to quote in its entirety a sad little verse which appeared in the November issue of *The Dragon:*

*His Name Was Biln*

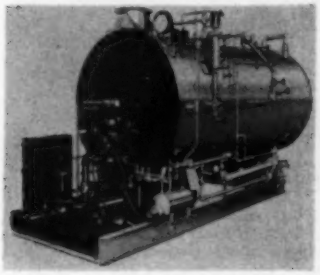
*Once a kiln worker tending a kiln*
*Lost his footing and took a bad spiln;*
*When he came out as clinker*
*His boss said, "That stinker*
*Wiln give a bad name to our miln."*

# NEW MACHINERY and SUPPLIES

### • Quick-Change Gas-Oil Boiler

Steam boilers that can be changed from gas-fired to oil-fired in less than 10 seconds are announced by the Cleaver-Brooks Company, 326 East Keefe Avenue, Milwaukee 12, Wis.

The change is accomplished by moving a selector switch on the control panel

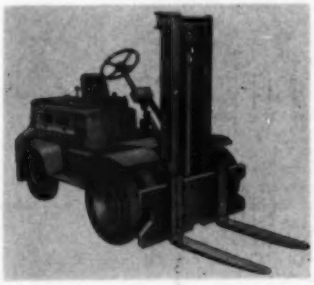


and changing the fuel supply valves. No other changes are necessary as the boiler operates on gas with the oil burner in place. These boilers are of 4-pass construction and are self-contained. They are used for generating heating or process steam.

### • 3-Speed Lift Truck

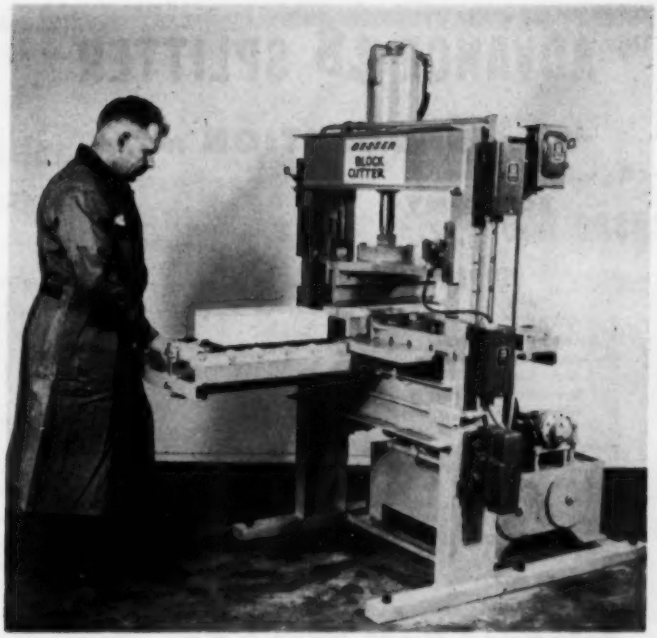
The "Yardlift-60" fork truck made by the Clark Equipment Company, Battle Creek, Mich., has been improved by the use of a new 3-speed transmission and a new design of fork mounting plate.

The new transmission provides three speeds which gives easier shifting and permits the use of a lower 1st-gear ratio



for more power. The low-speed gear now enables the Yardlift-60 to climb a 24 percent grade under full load. This new transmission is being used only in the friction clutch models. Dynatork Drive is also available.

The new fork mounting is designed for greater interchangeability of attachments and devices between all makes of fork trucks of comparable capacities.




### • Block Cutter

A block cutter that features automatic and semi-automatic operation has been placed on the market by the Besser Manufacturing Company, Alpena, Mich.

The block cutter is hydraulically operated and is made in 18 and 24 in. sizes. Straight cut block are automatically positioned by the machine under the knife while longitudinal, diagonal and tranverse cuts must be placed manually although the same cutting table is used. The machine is easily adjusted to accommodate various heights of block. The machine is rigidly and safely constructed so that inexperienced operators may be easily trained. The capacity is 420 block per hour or 850 cut units.

### • Precast Lintel Forms

A set of forms for the making of precast concrete lintels for doors, windows and other openings in masonry structures is being marketed by J. W. Appley and Son, P.O. Box 849, Station A, St. Petersburg, Fla.

The set consists of forms to cast a complete set of lintels for the average two bedroom house and range in length from 3 ft. to 14 ft. Each form has an outside form, core, jamb tubing, divider, and clamps.

### • Radio Communication

A line of radio communication equipment operating in the 450-470 mc. band has been announced by Motorola, Chicago 51, Ill.

This two-way radio features a mobile unit that operates on 6 or 12 volt d.c. The base station models are available with or without remote control. The transmitter employs 9 standard tubes and has a nominal power output of 20 watts. A number of other features are incorporated in the sets.

A LABEL OF QUALITY

Your manufacturer of a complete line of cement block machinery.

GEORGE PRESSPAC

• MACHINES • PALLETS
• MIXERS • CONVEYORS
• AIR HOISTS

BEFORE YOU BUY, WRITE - WIRE - CALL

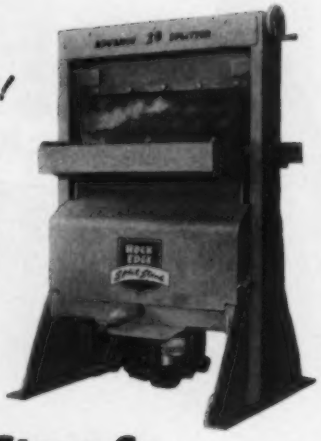
F. C. GEORGE MACHINE COMPANY

100 S. WESTMORELAND DRIVE ORLANDO, FLORIDA

# THE ADVANCE 28 SPLITTER

*For* **PRODUCTION** *with*

**ECONOMY**
*and*
**EFFICIENCY!**



The ADVANCE 28 SPLITTER . . . designed by our engineers to give you economical production with minimum cost. The ADVANCE 28 SPLITTER is solidly constructed . . . only 56" high and will split block 28" long and up to 8" thick (shown in photo). Investigate today the possibilities of getting into the highly profitable Rock Edge Split Stone market. WE FURNISH THE FORMULA TO PRODUCE BEAUTIFUL COLOR TEXTURES — ESTABLISHED SINCE 1928.

***WRITE TODAY FOR DETAILS!***

**Advance Cast Stone Co.**

532 EAST NASH ST. • MILWAUKEE 12, WIS.

# COMPLETE PLANTS

## from a Single Source

- "Tilt-Up" Mixers
- Ready-Mix Plants
- Expressway Semi-Portable Plants
- Dry Batch Plants
- Cement Bins
- Aggregate Bins
- Cement Storage

## ENGINEERED TO WORK TOGETHER

From conveyor to elevator, from bin to mixer Burmeister equipment is designed and built by the same organization. Because each product is *"engineered to work together"* you are assured less costly "conversions," maximum production speed, accurate delivery of materials, and greater economy of operation. See your nearest Burmeister Distributor or write for details.

**FREE CATALOG**

Send for new 16-page illustrated Catalog of Burmeister Plants and Equipment.

COMPLETE PLANTS FROM A SINGLE SOURCE

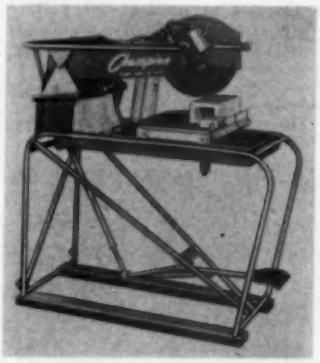
**Burmeister**

L. BURMEISTER CO., 4535 W MITCHELL ST., MILWAUKEE 14, WISCONSIN


### • Masonry Saw

A portable masonry saw, called the "Tak-A-Bout" has been brought out by the Champion Manufacturing Company, 2028 Washington Avenue, St. Louis 3, Mo.

The machine is constructed of tubular steel for light weight and strength. Two sizes are being made, a 14 in. blade



model, and a 12 in. blade one. These are available in either wet or dry styles. The larger model is powered with a 1½ hp. motor while the smaller uses a 1 hp.

While made in wet or dry styles the dry one can be converted to wet sawing by a conversion kit. The wet sawing models have a self contained water system and a self priming pump.

---

The Challenge Manufacturing Company of Los Angeles, which produces transit-mix concrete equipment, has purchased a 12-acre site near Bryan, Ohio, for a new assembly plant. Challenge will take possession of the property on May 1. According to J. R. Castendyck, company spokesman, the plant will employ 150 men when in full production.

---

William C. Homer has been elected vice-president and general manager of Barnes & Cone, Inc., reported to be one of the largest producers of concrete blocks in eastern United States. Mr. Homer was formerly sales manager of the company.

---

At East Aberdeen, Wash., Hagara and Snell, a general contracting and excavating concern, has installed a ready-mixed concrete plant near the shipyards. Capacity is expected to be about 100 cu. yd. per day. Aggregates are supplied from the firm's own deposits on the Wynooche River near Aberdeen.

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The Christensen Concrete Products, Grand Island, Neb., has been granted a $61,000 loan from the Reconstruction Finance Corporation. About $35,000 will be used for purchase of machinery to increase the capacity of the plant.

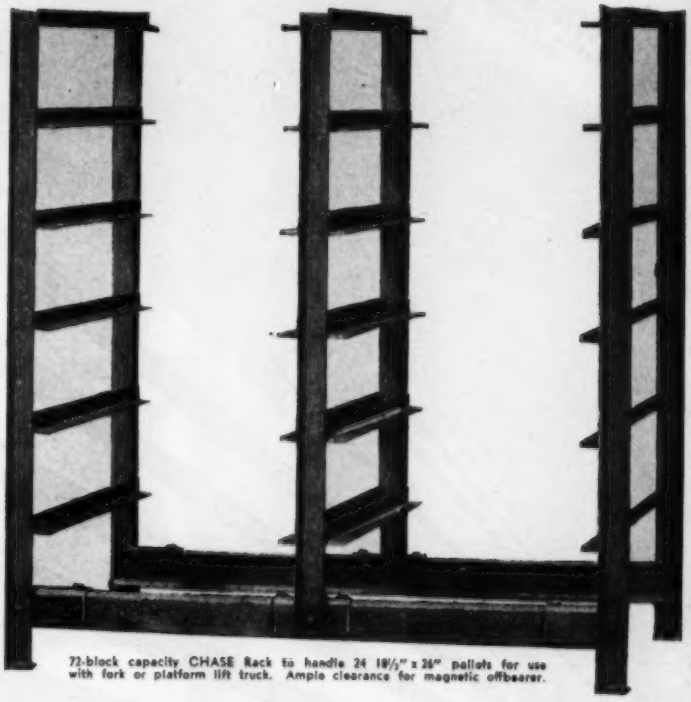
---

Octave Ammon, formerly with the State Highway Department, has joined the staff of the Universal Concrete Pipe Company, 297 S. High Street, Columbus, Ohio.

# A lot of Blockmakers Choose MODERN Chase CONCRETE BLOCK RACKS

## Good Reasons for Chase Installations

- Cost no more than ordinary racks
- Built of corrosion resistant high strength alloy steel
- Improved rigid side sill connection
- Easily assembled. Require no special tools or welding
- Shipped knocked down for low freight cost



72-block capacity CHASE Rack to handle 24 18½" x 26" pallets for use with fork or platform lift truck. Ample clearance for magnetic offbearer.

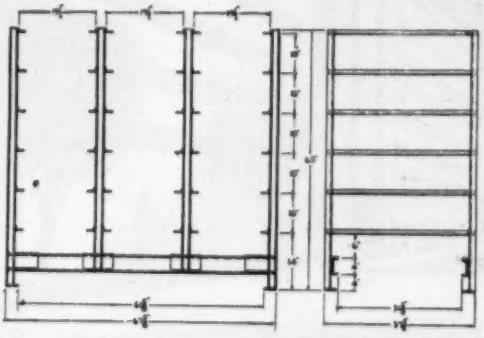
The progressive concrete block producer needs the best racks available to complement his block-making equipment.

That is why manufacturers all over the country insist on CHASE Racks that combine practical design with sturdy construction. These CHASE Racks are furnished in any style or capacity rack or car.

**PALLETS**

We can supply plain steel pallets to any size required, as well as pallets for rack shown above.

**CHASE RACKS — CARS & TRUCKS**



72-block capacity, 3-compartment Rack, for handling either 18½" x 18½" or 18" x 18" pallets.

**CHASE FOUNDRY & MFG. CO., COLUMBUS 7, OHIO**

# Trinity White

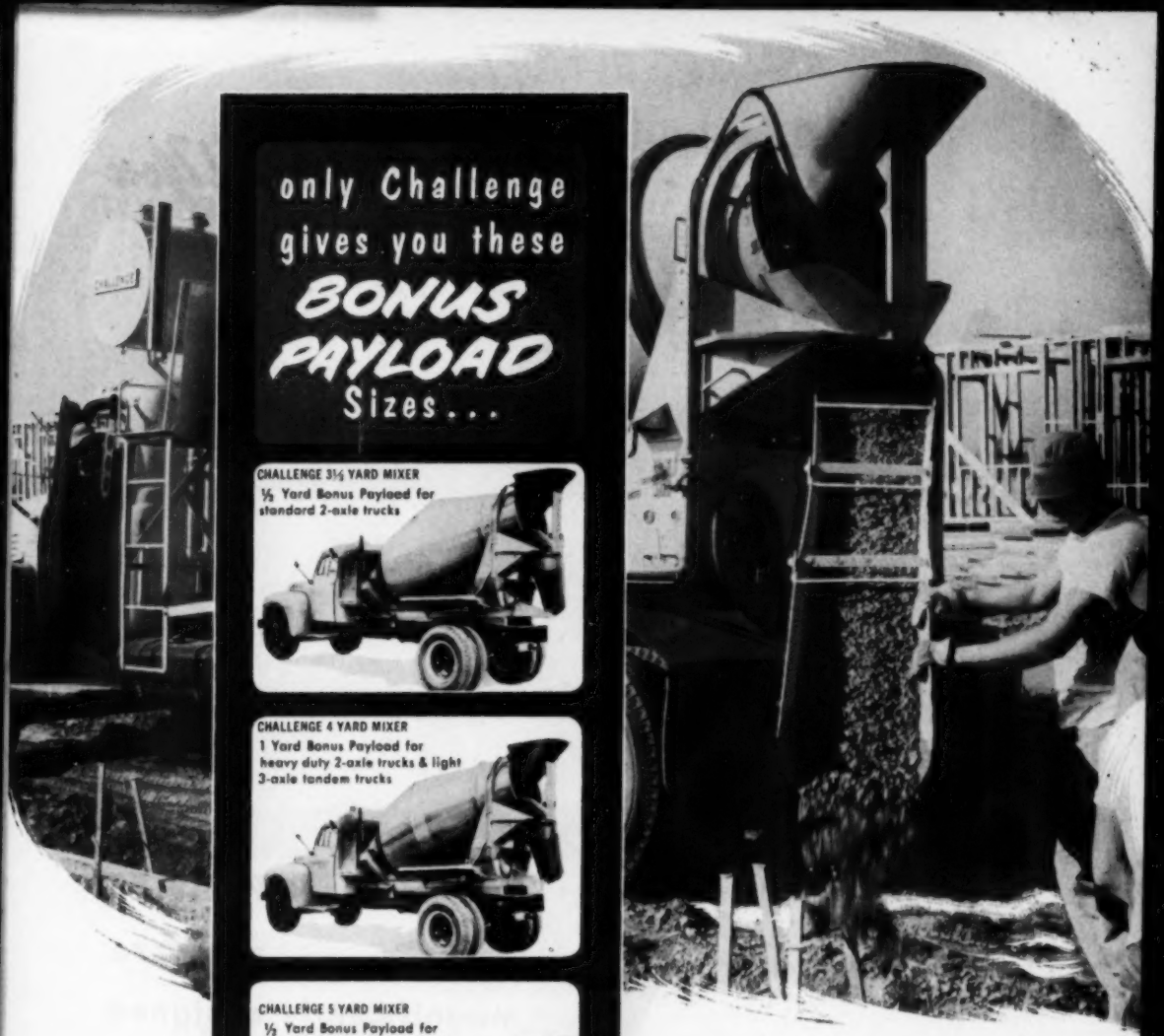
## THE WHITEST WHITE CEMENT

Use Trinity white—the *whitest* white portland cement. It gives extra eye-appeal to . . . architectural concrete units . . . stucco . . . terrazzo . . . cement paint. Trinity has many special uses because of its beauty and light-reflective properties. Trinity white is a true portland cement that meets all Federal and ASTM specifications.

General Portland Cement Co., 111 W. Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles; 305 Morgan St., Tampa; Volunteer Bldg., Chattanooga.

*a true portland cement*

As white as snow . . . plain or waterproofed



## only Challenge gives you these BONUS PAYLOAD Sizes...

**CHALLENGE 3½ YARD MIXER**
½ Yard Bonus Payload for standard 2-axle trucks



**CHALLENGE 4 YARD MIXER**
1 Yard Bonus Payload for heavy duty 2-axle trucks & light 3-axle tandem trucks



**CHALLENGE 5 YARD MIXER**
½ Yard Bonus Payload for standard 3-axle tandem trucks

**CHALLENGE 6 YARD MIXER**
½ Yard Bonus Payload for heavy duty 3-axle tandem trucks

Look For The N.R.M.C.A. Nameplate On Every Size Challenge Mixer

Being a member of the N. R. M. C. A., Challenge Mixers are made *and rated* in strict accordance with N. R. M. C. A. specifications. On inspection pours where mixers can only deliver their rated capacity, each of these Challenge Mixers will deliver a *Bonus Payload* over competitive mixers of comparable size.

Don't be fooled by a 3 yard mixer carelessly referred to as a 3½ yard mixer or a 4½ yard mixer referred to as a 5 yard mixer.

COOK BROS. TRUCK EQUIPMENT

**COOK BROS.**
**EQUIPMENT COMPANY**
1815 No. Broadway, CApitol 2-9111
Los Angeles 31, California

Exclusive National Distributors for CHALLENGE, The Modern, Streamlined Truck Mixer

**STANDARD OF THE INDUSTRY!**

*Just to Remind You*

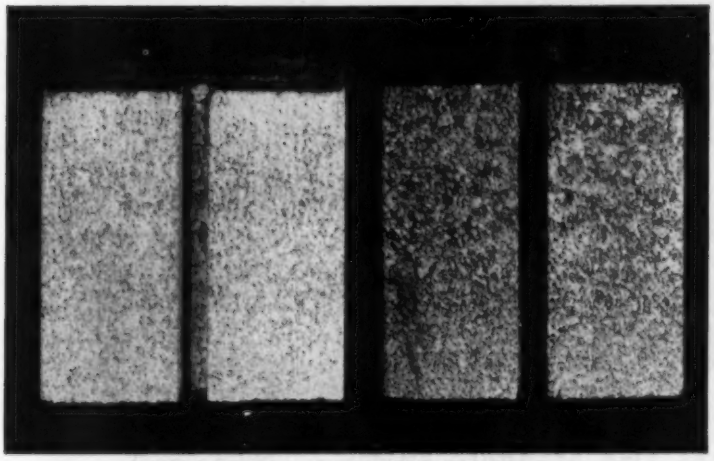
**BUTLER PLANTS**
**also are**
**magnificently designed**
**- - - - and they**
**step lively, too!**

**BUTLER BIN Company, Waukesha, Wis.**

# Better Concrete Blocks at lower operating costs by adding economical D-40

Let us show you how we have helped other concrete products manufacturers make superior blocks and at the same time reduce operating costs.

You will experience these advantages by adding a small amount of Detergent D-40 to the dry cement or wet mix.



Block A (left) made with D-40. Block B (right) made the old way. Note difference in texture, color, appearance. Sharp edges and corners.

**Better appearance—smoother, whiter, finer surfaces**

**Greater strength—less water produces stronger concrete**

**Closer bonding—saves on painting and waterproofing**

**Reduces abrasive wear on mixing and molding equipment**

**Saves time—mixes pour into molds faster—"break" cleaner**

**Easy to use—just add to dry cement or "mix"**

**Economical—D-40 costs you a fraction of a cent per block**

D-40 is a granular detergent widely used in manufacturing many different molded concrete products. It is supplied in 85# bags by Oronite, the world's largest producer of synthetic detergent raw materials. Because of its qualities only one to two oz. of D-40 per bag of cement is needed to obtain outstanding results. With D-40 you are assured of a stable, economic source of supply.

Ready-mixed concrete producers have found D-40 improves their product.

*For complete information, samples and technical help write or call the nearest Oronite office.*

**ORONITE CHEMICAL COMPANY**

38 SANSOME STREET, SAN FRANCISCO 4, CALIFORNIA
30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK
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MERCANTILE SECURITIES BUILDING, DALLAS 1, TEXAS

ORONITE CHEMICAL COMPANY
THE NAME TO WATCH IN CHEMICALS

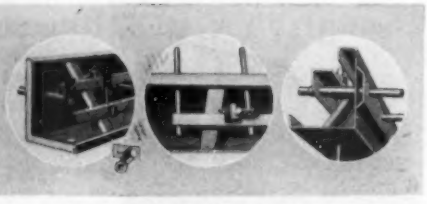
# BUSY CONTRACTORS WILL LIKE THIS FAST TURNOVER IN ROAD-AIRPORT FORMS . .

## Heltzel Combines Two Standard Forms To Simplify Handling • Reduce Inventory

If your business calls for multiple form sizes you'll want to know about the HELTZEL DUAL-DUTY FORM. Here are two individual form heights combined into a single form section. Simply turn it on its side and you have the second height. Latest form designs lend themselves to this arrangement naturally—providing lower initial purchasing costs and greatly reducing inventory problems.

The forming of the second rail on each form section greatly strengthens the section—assuring longer life. What's more, every DUAL-DUTY carries all the normal Heltzel features so popular with contractors today: corner-to-corner bracing—formed stake pockets; single, sure-bind wedging that eliminates counter thrust of a second wedge—and re-rolled rail stakes, heat-hardened and sharpened to penetrate toughest rock conditions, assuring firm grip and perfect form alignment.

Before you buy be sure to look over the one complete line of standard and special sidewalk, road, curbing and airport forms designed and built by the HELTZEL STEEL FORM AND IRON CO., WARREN, OHIO. Send for additional literature. Representatives throughout the world.



Three integral form devices, exclusive with Heltzel, can be readily adapted to Dual Duty Form for jobs calling for doweling. Field tested, these methods assure accurate alignment, fast handling and easy stripping. Others engineered upon request.

*Naturally It's A*

THE HELTZEL STEEL FORM AND IRON COMPANY — Heltzel — WARREN, OHIO

ROAD JOINT MACHINE COMPANY — Flex Plane — MECHANIZED CONSTRUCTION EQUIPMENT — WARREN, OHIO

# Here are just two of the big pages from the new Yale Hoist Book

## IT'S YOURS FOR THE ASKING

WHICH YALE HOIST IS BEST FOR YOUR NEEDS?
"Check Chart" OF YALE ELECTRIC HOIST FEATURES
YALE HOIST FEATURES
YALE ELECTRIC HOIST SELECTOR
YALE MAKES A COMPLETE LINE OF HAND AND ELECTRIC HOISTS

**YALE***

**MATERIALS HANDLING EQUIPMENT**

**Registered trade mark*

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"I could see the corpsman kneeling over me. The blood plasma was running down through a tube into my arm and he said everything was going to be O.K. I was walking across an enemy mine field in Seoul when one exploded and a piece of shrapnel caught me in the leg.

" 'Got enough of that stuff?' I asked him, pointing to the blood. 'I guess we never have enough,' he said, 'but you can thank *somebody* for this pint.'

"How do you thank 'somebody' for blood? For saving your life? When I got back home, I discovered the answer at my local blood donor center. There's only *one* way to say thanks—by giving some of your own blood."

# "How do you thank 'somebody' for Blood?"

Yes, all kinds of people give blood—for all kinds of reasons. But whatever *your* reason for giving blood, this you can be sure of: Whether your blood goes to a combat area, a local hospital, or for Civil Defense needs—this priceless, painless gift will some day save an American life!

**Business Executives!**
**√Check Those Questions!**

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ☐ Have you given your employees time off to make blood donations?
- ☐ Do you have a Blood Donor Honor Roll in your company?
- ☐ Have you set up a list of volunteers so that efficient plans can be made for scheduling donors?
- ☐ Have you arranged to have a Bloodmobile make regular visits?
- ☐ Has your management endorsed the local Blood Donor Program?
- ☐ Have you informed employees of your company's plan of co-operation?
- ☐ Was this information given through Plant Bulletin or House Magazine?
- ☐ Has your company given any recognition to donors?
- ☐ Have you conducted a Donor Pledge Campaign in your company?

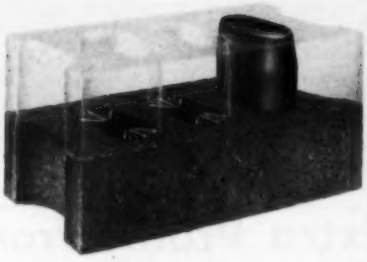
Remember, as long as a *single* pint of blood may mean the difference between life and death for *any* American . . . the need for blood is *urgent!*

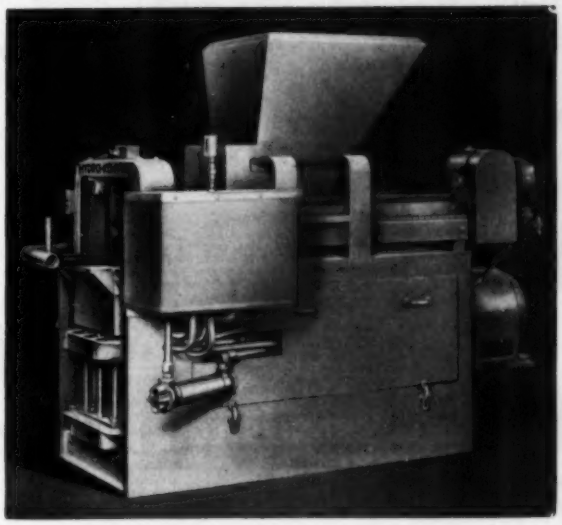
## Give Blood Now—Call Your Red Cross Today!

***National Blood Program***

# *Hydro* KORPAK

## *The Modern High-Production, Low-Investment Block Machine*





**Mechanics, hydraulics and electronics have been coordinated to bring block machine efficiency to a new high point . . . yet with ONE-MAN OPERATION.**

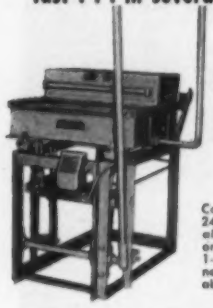
At last comes a block machine of streamlined compactness that brings low-cost, automatic production within reach of men of modest capital. One that combines the four major objectives of *scientific compacting . . . hydraulic operation,* electrically controlled . . . *one-man labor* . . . and *moderate price.* All in order to produce a super-fine block—marked by the utmost in accuracy, smoothness and density—at remarkably low production costs. Among the outstanding construction highlights is *lateral compacting,* whereby swiftly oscillating cores predensify the material in advance of the final intensive squeeze exerted by the powerful hydraulically operated ram. Thus is combined the combination of lateral and vertical packing, with *uniform* density in every cubic inch. Regularly equipped to make nominal 8x8x16″ in full and fractional sizes. Attachments available for four other thicknesses: 4″, 6″, 10″, 12″. *Modular conformation* in all dimensions, but can be supplied for making the old standard sizes. Finely engineered. Precision built. Evidence of rugged construction is a gross weight of more than 2¼ tons. Compactness is shown by overall dimensions of 90 inches long by 53 inches wide. Fully self-contained. Write for your copy of the new descriptive catalog.

**CONCRETE EQUIPMENT COMPANY**

531 Ottawa Avenue
Holland, Mich.

# make $200 profit per day with new RAINBOW ROCK MACHINE

**new building materials machine makes modern slump brick fast . . . in several sizes, colors . . .**



**cash in with this new machine . . . fully guaranteed only $750** fob factory compl. With Motor

Capacity of 1500 beautiful concrete slump bricks daily, 24" long, 3½" wide . . . 1½", 2½" or 3½" thick. Steel all-welded high speed machine operates easily, indoors or out, with wood pallets of 2x4 lumber. Complete with 1-HP elec. motor, or powered by gasoline engine. Needs no special skill, simple operating instructions and valuable mixing formulae included.

**send for free literature today**

Act Now For This Sensational Buy! Big Profits!
Limited Number Available For Immediate Shipment!

**no cost for individuality! labor cost cut 1/3!**

The demand for exciting new Rainbow Rock is terrific. It's modern, practical, economical. Its many fade-proof pastel colors create desired individuality without extra expense. Sized larger than ordinary brick and easier to lay up, attractive Rainbow Rock cuts labor costs by one-third. And so many uses! Interior and outer walls, chimneys, fireplaces, steps, driveways, garden walls, walks, breezeways and garages. You can make it in several distinctively textured faces, perfect for latest building trends.

Fireplace of sensational new Rainbow Rock, one of the many luxurious effects with this versatile new building brick.

**GENERAL ENGINES CO.** Dept PQ-33, 307 Hunter St., Gloucester, N. J.

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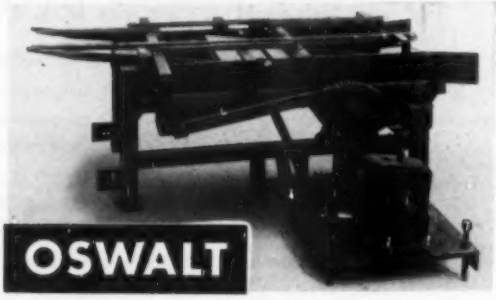
*Well Pleased* **with the Extra Profits from Increased Block Production**




BETTER BLOCKS for VIBRAPAC OWNERS

Many satisfied customers operating scores of machines.

Write for name of Oswalt-Serviced plant nearest you.

**NEW SHOCK-FREE BLOCK EJECTOR and FRONT PALLET FEEDER**

The smooth, gentle motion in block delivery from mold to pallet eliminates green cracking. Culls are reduced to a minimum. The higher percentage of good blocks means more profitable production.

Correct, uniform height of blocks is easily maintained by automatic controls on the vibrating motors. The adjustment of a special timer insures constant density. A signal system enables operator to regulate feed so as to compensate for variations in mix.
All these added features of Oswalt Service are designed to handle any block production up to speeds of 1080 units or more per hour . . . without sacrifice of quality . . . or the cracking of green blocks.

Full Details in New Bulletin ➡ **OSWALT ENGINEERING SERVICE CORP.**
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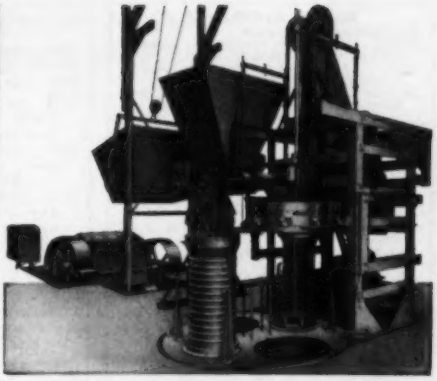
# You Can't Match McCracken FOR CONCRETE PIPE PRODUCTION

1. Doubles production in all sizes 4" to 36".
2. Handles 90% of suburban market—80% of metropolitan market.
3. Does twice the business with half the inventory.
4. Makes all the sizes in which machine-made production and fixed-plant operation offer any real economy.
5. Produces quality pipe to meet all requirements with liberal margin of safety.
6. Reduces cost from 50% to 10%—50% on the 6" size down to 10% on the 36" size.
7. A wide range of sizes with lowest costs in every size it makes.
8. More resales—you can't sell a lemon to the same man twice.



MODEL "T" (Pictured Above)—4" to 36";
MODEL "R"—4" to 18";
MODEL "D" for Drain Tile—sizes 4" to 16"

WRITE FOR COMPLETE INFORMATION TO DEPT. CPS
at any of the following addresses:

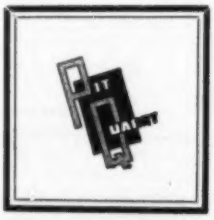
Eastern Representative
Harry E. Amar
211 East 149th St.
New York 51, N. Y.

Central & South American Agent
George W. Hoffmann
Apartado Postal 1173
Mexico, D. F.

MAIN OFFICE AND FACTORY, SIOUX CITY, IOWA

CONCRETE PIPE MACHINERY CO.
SIOUX CITY, IOWA

OVER 17,000 POTENTIAL BUYERS
*AT YOUR FINGERTIPS*



LIST YOUR USED EQUIPMENT
OFFERINGS REGULARLY
in the
* BROADCAST SECTION
of
**PIT AND QUARRY**
431 So. Dearborn St. Chicago 5, Ill.

***The meeting place for buyers and sellers***
*Largest Classified Advertising Section Serving the Industry

"BRANFORD" PNEUMATIC VIBRATORS

"BRANFORD" Vibrator installed on sand hopper.

## Reduce Material Handling Costs Install "BRANFORD" Air Vibrators

to promote free flow of materials thru hoppers, bins, screens and other handling equipment.

ECONOMICAL OPERATION • EASY INSTALLATION
NO DESTRUCTIVE POUNDING

SIZES TO HANDLE ANY JOB • LARGE OR SMALL

*Send dimensional data; nature of material, etc., for our recommendations.*

New Haven VIBRATOR COMPANY
165 CHESTNUT STREET, NEW HAVEN, CONN.

## WINTER CLEARANCE

**MATERIAL LOADERS**

Hough "HL" 1-Yd. Payloader, Gravity Dump. Reconditioned

Halss "77C" Crawler Bucket Loader. Reconditioned

Barber-Greene "522" Rubber-tired Bucket Loader. Reconditioned

Cletrac "DGH" Gas Tractor w/Drott Hyd. Loader, 1100 hours. Like new

Caterpillar "D-4" Diesel Tractor w/Traxcavator Front End Loader

**TRANSIT MIXERS**

Smith 2 yd. Hi-Discharge Mixer w/White Truck

Rex 2 yd. Hi-Discharge Moto-Mixer, un-mounted

Rex 2 yd. Hi-Discharge Mixer w/Ford Truck

Rex 2 yd. Hi-Discharge Mixer w/Chevrolet Truck

**CRANES & SHOVELS**

Lorain "TL-25-K" ¾ yd. Diesel Hoe, Reconditioned

Koehring "301" ⅝ yd. Gas Dragline, 45' Boom, Fairlead. Cheap

Link-Belt "UC-55" ½ yd. Dragline or Hoe, self-propelled, rubber-tired unit

Insley "K-12" ¼ yd. Dragline, 30' Boom & Fairlead

Sargent "28" ⅜ yd. Trench Hoe, mounted GMC 6x6. Demonstrator. Discount

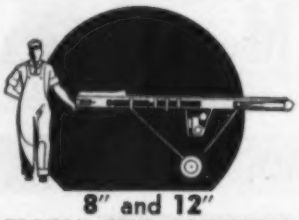
**MISCELLANEOUS**

IHC "T-9" Gas Tractor w/Heil Cable Dozer. Reconditioned

Trailer, Tilt-Top, Tag-A-Long, 9.00 x 20 tires ($-ton)

Cedarapids Portable Primary Plant on Pneumatics w/1524 Jaw Crusher, 24" x 6'0" Apron Feeder, gas power, 30" discharge conveyor, etc.

**EIGHMY EQUIPMENT COMPANY**
ROCKFORD, ILLINOIS



## 8" and 12"
## TROUGH BELT CONVEYORS

**Sand • Gravel • Redi-Mix**

**Basement Excavating**
**18' - 24' - 30'**

## $444 to $770

**Gas or Electric Drive**

*Send for Literature*

## New London Engineering Co

NEW LONDON • WISCONSIN

## FOR SALE

Concrete Irrigation Pipe Manufacturing Plant. Located central San Joaquin Valley near Fresno. Exceptionally modern in mechanized equipment from handling of materials to loading cured pipe. $20,000 net 1951, ($20,000 plus) net to September 30, 1952. Owner established business 1937, has highest rating by Dun-Bradstreet. Underpriced at $76,500 plus inventory at cost. $6,000 a year manager will continue during transition period at reduced salary.

**Caruthers Concrete Pipe Company**
P.O. Box 113 Caruthers, California

UNBREAKABLE
## PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

## PRICED TO SELL

Nine Concrete Truck Mixers completely reconditioned and in excellent operation.

#28, one 1944 Brockway truck, Model 152W mounted with 4 c.y. Rex horizontal mixer.

#38, one 1942 Brockway truck, Model 152W mounted with 4 c.y. Rex horizontal mixer.

#31 - #32 - #34, three 1940 Brockway trucks, Model TM Spec. each mounted with 4 c.y. Rex horizontal mixers.

#4 - #6 - #12 - #16, four Brockway trucks, Model T.M. Spec. each mounted with a 3½ cu. yd. Rex horizontal mixer.

All equipment is currently in operation and can be seen at our plant.

**HOWAT CONCRETE COMPANY, INC.**
South Capitol at S Street
Washington 4, D. C.
Phone: Lincoln 6-5522

## A REAL BUY

1—Fully automatic plain pallet block machine complete to make (2) 7⅝x7⅝x15⅝ block at each operation, including all necessary motors and controls — air type offbearer — also attachments for making 4", 6" & 12" block, chimney block and a number of specialties—Stearns 28' Mixer, Skip Hoist, (60) steel racks, (1725) ¼x18x18 steel pallets (like new) ..... $7500.00
(This machine can be seen at any time and is now in operation in nearby Maryland and is averaging 3400 8x8x16" units per day.)

1—42' Stearns Mixer complete with 30 HP motor, V-belt drive, new paddle shaft, gears and Nillard plate type liners ..... $2500.00

1—42' Stearns Skip Hoist complete with motor and controls ..... $ 750.00

1—28' Stearns Skip Hoist complete with motor and controls ..... $ 600.00

2—28' Stearns Mixers complete with Nillard liners, 20 HP motor and built-in V-belt drive. Each ..... $1250.00

**METROPOLITAN EQUIPMENT COMPANY**
Distributor of GeCORP Block Machines
P. O. Box 4465
Washington 17, D. C.

## FOR SALE

Stearns Jolterete No. 7 Block Machine complete, in good running condition—elect. switch boxes, extra vibrator motor—two 8" mold boxes & pressure heads—one 4" mold box & pressure head—pressure heads for 8" corners, sash, pilaster and bull nose blocks—cores & pressure heads for 8" halves in commons, corners, sash and bull nose—4200 4" steel pallets—2900 8" steel pallets—450 8" corner pallets—200 8" sash pallets—150 8" pilaster pallets—600 8" half pallets for commons, corners, sash, bull nose,—check plates & attachments for 8" bull nose—both round & single round corners—one Stearns Hydraulic Off Bearer—all cleaned & ready for immediate use. Phone or write

**FREDERICK G. SMITH & COMPANY**
**327 E. Stephenson Street**
**Freeport, Illinois**
***Phone Main 3700***

FOR SALE—Concrete Products & Building Supply business—North Central Ohio. Rich farm trade area—2 cities 20,000 ea. and several smaller towns and villages. Business in 6th year. Gross 1952 over $56,000.00. Recently appraised at $41,500.00. No place to go but up. Make an offer. Selling because of amicably unsatisfactory partnership.

BOX No. DM-57
C/O CONCRETE MANUFACTURER
431 South Dearborn Street Chicago 5, Illinois

**FOR SALE**

Jolterete's Models 7 and 9's, Modular P.B. Pallets 4", 8" and 12", Ventilated chimney block attachment with 480 cast iron pallets, for a No. 7. Turntables—Steel racks—Skip Loaders.

**GUY D. MOODY**
Box 852 Bristol, Va.

LOWER COST
## PACKER-HEAD WINGS
Proved to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

**FOR SALE**

1—2 cu. yd. Butler Cement Weigh Batcher, 14 ft. capacity, including scales—1 tare beam and 3 weigh beams with selonoid lifters.

1—8" x 15" Rotary Cement Valve for air operations with all controls.

**MID-SOUTH CONCRETE PIPE CO.**
P.O. Box 6833, Hollywood Station
Memphis 8, Tennessee

## MIXER BARGAINS

JAEGER, 1941, 2 yd. Horiz. Ser. #J6120. Mounted on 1947 Intl. KBS-7 ..... $1350

JAEGER, 1941, 3 yd. Hi-Disch. Ser. #J5183..... $800

SMITH, 1941, 1½ yd. Hi-Disch. Model 408, Ser. #51123. Mounted on 1946 Intl. K-6 ..... $1200

Above Units in Good Operating Condition. Replacing with Larger Units.

**W. G. BLOCK CO.**
**Davenport, Iowa**

## FOR SALE

F.O.B. Our Plant (1) F.M.C. 180 Fully Automatic, Complete With Motor, used 1½ years. Price **$1,483.00.**
(2) 8" Mold Boxes — Ea. **$106.00.**

**STEEL RACKS**

(30) Racks, Capacity, 48 blocks per rack. Dismantable — Price ea. **$16.00.**
F.M.C. 24, 2 Bag Mixer—Price **$750.00.**
(1) Bonded Scale Crusher, Capacity 25 yards per hour, without motor — Price **$250.00.**

**COLONIAL BLOCK CORPORATION**
**Fairview Blvd. & Virginian R.R.**
**Norfolk 9, Virginia**

## CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

*manufactured by*
LANDERS-SEGAL COLOR CO.
71 Delevan St. Brooklyn 31, N. Y.

**FOR SALE**

1—Used Stearns Model 15 concrete block making machine. Good condition. With a new 8" attachment. Priced to sell.

**BOX No. DM-51, c/o Concrete Manufacturer**
**431 S. Dearborn St. Chicago 5, Ill.**

**FOR SALE**

43 steel drying racks holding 72 concrete block each. Made for hydraulic off bearer—spade type—and were made especially for 3 block Stearns Jolterete Block Machine.

**LAKE VIEW CONCRETE TILE COMPANY**
**LAKE VIEW, IOWA**

**FOR SALE**

1—8" Mortarless Hydraulic Machine, complete with hydraulic pump, tank, and pallets. $2,250.00. (Tank, pump, or pallets may be purchased per unit separately.)

1—Koehring — 1 cu. yd. Central Mixer with 25 H.P. motor. $2,250.00. Mixer is completely reconditioned and never used. Fins new. Will sell Mixer or motor separately.

Must sell — being replaced by larger equipment.

**COWAN CONCRETE PRODUCTS**
625 Third Street Box No. 1647
Greeley, Colorado

**MAQUINARIA y MOLDES**
*para fabricación de bloques y tubos de concreto*

PIDA CATALOGO
Y PRESUPUESTOS

**GEORGE W. HOFFMANN CO.**
P. O. Box 482, Sioux City, Iowa, U.S.A.

**MINERAL COLORS**
for
**BRICK MORTAR**
**STUCCO-PLASTER-CONCRETE**
*"Fine Because of Their Fineness"*
*Ask for samples and recommendations.*
**BLUE RIDGE TALC CO., INC.**
**HENRY, VIRGINIA**

**FOR SALE**

1941 BESSER VIBRA PAC
3-AT-A-TIME MACHINE

**BARNES & CONE, INC.**
**Syracuse 6, New York**

**STOP *that* WATER**
**With FORMULA NO. 640**
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
**HAYNES PRODUCTS CO., OMAHA 3, NEBR.**

FOR SALE: 2—Jolterete 27 Block Machine free with pallets. 1—Jolterete 27 Machine with 4" x 8" attachments. 1—Machine with 4"-6" & 8" attachments. Approximate pallets:
3000—50% void modular 8" steel pallets $.50 ea.
3000—50% void 8" modular cast iron pallets $.50 ea.
2700—50% void 4" modular steel pallets $.35 ea.
3000—50% void 4" modular cast iron pallets $.35 ea.
1700 6" steel pallets $.40 ea.
Both machines and pallets can be seen at
**CEDARTOWN BLOCK and CONCRETE CO.**
Cedartown, Georgia Telephone 500

**HELP WANTED**

Territory representatives. Excellent opportunity for right organization or man to sell full line of concrete products machinery. Must be willing to travel. Good commissions. Leads furnished.
BOX NO. BK-21, c/o
THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

## *PRICED TO SELL*
## TWO COMPLETE CONCRETE PLANTS

**Plant 1.**

| Consists of: | Date Purchased |
|---|---|
| 1—Air compressor (Elec. Motor) for Cement Bin | 6/11/52 |
| 1—100 Ton—Blawknox—3 Comp. Aggregate Bin—5 yd. Hopper and Scales | 2/28/51 |
| 1—400 Bbl. Blawknox Cement Bin 1 Comp. with screw, elevator & 5 yd. Hopper and scales | 2/28/51 |
| 1—400 Bbl. Aux. Cement Bin—Blawknox | 7/11/52 |
| 1—Butler Hopper 15" x 15" Gate | 6/18/52 |
| 1—Water Meter—2" Neptune—Model 240 | 4/30/50 |
| 1—Butler No. 7 Track Plant with Screw, Elevator and Gas Motor | 6/13/52 |
| 1—Littleford Steam Generator Plant—Model 1000E with electric Motor | 1/17/52 |
| 2—Aero Hot Water System with 1" Elec. Pump | 1/31/50 |
| 1—Belt Conveyor with new, never used, extra motor | |

Plant located at Blue Ridge Summit, Pennsylvania. Placed in operation (Brand new) on July 10, 1952, and has handled less than 50,000 cu. yds. of concrete.

**Plant 2.**

| Consists of: | Date Purchased |
|---|---|
| 1—100 Ton—3 Compartment Aggregate Bin—Johnson, with 2 yd. Hopper & Scales | 11/28/49 |
| 1—300 Bbl. 1 Compartment Cement Bin, Blawknox | 10/28/49 |
| 1—Bin Indicator for Cement Bin—Blawknox | 3/31/50 |
| 1—Butler Cement Elevator—10" Screw—7½ H.P. Motor | 12/23/49 |
| 1—Butler Cement Screw Extension 10" x 10' | 2/25/50 |
| 1—Bucket Conveyor—100 Ton per hour, with 15 H.P. Electric Motor, never used | 6/26/52 |
| 1—Front End Loader—¾ yd. Sheppard & Set Teeth | 6/ 2/52 |
| 1—Butler No. 7 Track Plant, with screw, elevator and Gas Motor, never used | 9/25/52 |
| 1—Butler Screw Extension 10" x 10' | 9/25/52 |
| 1—1 yd. Concrete Mixer with Elec. Motor | |

Plant may be seen in our yard here in Washington, D.C. Kindly note that while aggregate Bin, Cement Bin and Elevator have been in operation, the balance of equipment is entirely new and never used.

**HOWAT CONCRETE COMPANY, INC.**
**South Capital at S Street Washington 4, D.C.**
**Phone: Lincoln 6-5522**

**POSITION WANTED**

Former sand & gravel-concrete block manufacturer desires position as airplane pilot with progressive concern. Commercial, flight instructor and instrument pilot licenses. Executive and sales ability.

**BOX No. DM-53**
**c/o The Concrete Manufacturer**
**431 South Dearborn St., Chicago 5, Ill.**

**MACHINERY WANTED**

1—2 yard Transit Mixer
1—Small Tabletop Vibrator
1—F. M. 180 8" Mold Box

**CHERRYVILLE CONCRETE PRODUCTS CO.**
North Pink Street Cherryville, N.C.

**FOR SALE**

EXTRA PROFIT FOR YOU
making burial vaults or septic tanks.
We can supply new or used molds, customers everywhere, full instructions, sales help, prices right, below present cost. We manufacture, buy and trade forms. Tell us what you need or have for sale in molds.

**CEMSTONE VAULT COMPANY**
5005 E. Admiral Place Tulsa 12, Oklahoma

## FOR SALE

1 Ford tractor, dual wheels, complete with backhoe and heavy duty hydraulic loader.
1 American No. 8 road patrol. A-1 condition.
1 Jaeger horizontal transit mixer, 3-4½ yd. Good shape.....$450.00
1 Challenge 3 yd. Hidump Mixer, A-1 shape.
1 Johnson revolving distributing shute.
1 1949 Chev. dump truck with new Anthony bed.

**SILVER BROTHERS**
**Hoopeston Phone 875 Illinois**

**FOR SALE**

Multico #2
4" attachment
8" attachment
Chimney block attachment
power off-bearer

1—Multico #2 with power pack
1—off-bearer, electric motor type
1—complete mold box and pressure-head assembly for 2 7⅝" block
1—complete mold box and pressure-head assembly for 4 modular 3⅝" block, 2 cored and 2 solid
1—complete mold box to make 1 chimney block

***This equipment practically new. Will be sacrificed by the owner. Reason for sale, recently purchased much larger production unit.***

BOX No. DM-50
c/o CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

**WANTED**

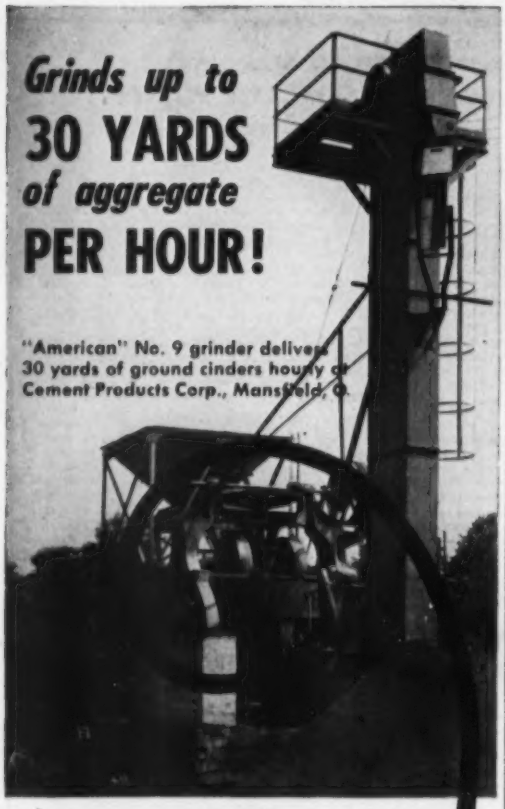
Martin Concrete Pipe Machine, slip joint forms all diameters; will buy machine or forms separately if necessary.

**BOX NO DM-54**
**c/o THE CONCRETE MANUFACTURER**
**431 South Dearborn St. Chicago 5, Illinois**

**WANTED**

A large established New Jersey Concrete Concern has an opportunity for a concrete Engineer or Technician who is thoroughly experienced with ready mixed concrete.

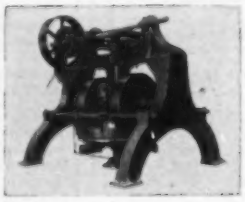
**Box No. DM-56 c/o CONCRETE MANUFACTURER**
**431 S. Dearborn St. Chicago 5, Ill.**



*Grinds up to*
**30 YARDS**
*of aggregate*
**PER HOUR!**

"American" No. 9 grinder delivers 30 yards of ground cinders hourly at Cement Products Corp., Mansfield, O.

**HERE'S WHY AN *American* GRINDER IS THE *RIGHT* GRINDER FOR YOUR PLANT . . .**



- Needs no screen plates
- Handles material wet or dry
- Adjustable to your volume and size requirements
- Requires only minimum maintenance
- Has low power consumption
- Good for years of trouble-free operation

**YOU CAN'T BEAT AN "AMERICAN" FOR GRINDING**

- CINDERS
- HAYDITE
- PUMICE
- SLAG

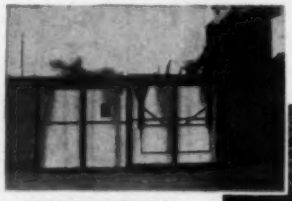
**and a wide range of quarry and mine products.**

If accurate grinding, in volume, poses a problem in your plant . . . ask for a non-obligating consultation with the "American" grinding specialist . . . write, wire or phone.

***American* GRINDERS**

**W. A. RIDDELL CORP., BUCYRUS, OHIO**

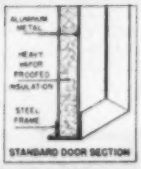
**SAVE FUEL • REDUCE CURING TIME • CUT COSTS • UP PROFITS with *Standard* KILN DOORS!**



**WHERE AISLE SPACE IS LIMITED**
The sliding carrier-type door needs no aisle space. Carrier equipment requires 15 inches minimum clearance above top of doors.

**WHERE HINGE-TYPE DOORS ARE PREFERRED**
The hinge-type door is pulled up by a chain hoist. It can be used when there's insufficient room at sides of door opening to permit using the carrier-type door, and where aisle space is adequate.

**CHECK THESE FEATURES**



STANDARD DOOR SECTION

- √ Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.
- √ Rugged Steel Frame.

*Get the Best — Send for Details Now*
**STANDARD DRY KILN COMPANY**
P. O. BOX 5708 • INDIANAPOLIS, INDIANA

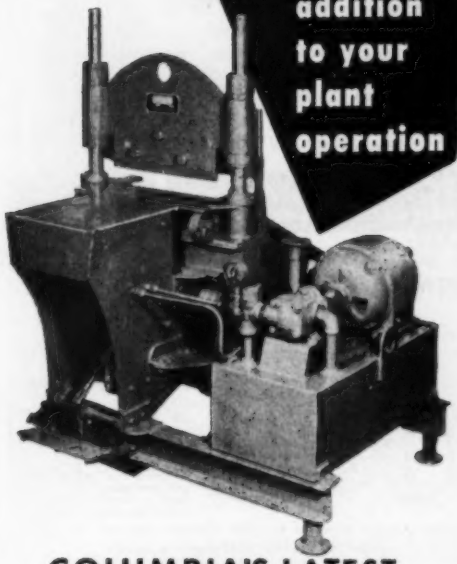
*Join the*
# CONCRETE MIX SUPPLIERS
NOW OFFERING
## LIGHTWEIGHT CONCRETE
MADE WITH
LIGHTWEIGHT CONCRETE PROTEIN ADDITIVE **CEMTEIN**
FOR WALLS, FLOORS, AND ROOFS

- Eliminates stock piling of specialty aggregates
- Widens profit margin by lowering materials, cost

WRITE FOR COMPLETE PRODUCT INFORMATION AND MIX DESIGNS

**VAN HOVEN COMPANY, INC.**
Dept. PQ-353, St. Paul 1, Minn.

*Another* profitable addition to your plant operation



COLUMBIA'S LATEST...

*the* **Block Splitter**

**TRIED, TESTED, PROVEN,** the New Columbia Block Splitter proudly takes its place in the Columbia line of machines for the block-making industry. The new Columbia Block Splitter, like all other Columbia machines, combines compact, sturdy, precision engineering and economical operation with a low capital investment.

Easy portability, 8-inch and fractional cutting capacities, and many other improvements make the Columbia Block Splitter a valuable addition to your plant operation.

**NATIONWIDE SALES, PARTS AND MAINTENANCE SERVICE** with headquarters in in the following states: Washington, California, Wisconsin, Mississippi, Florida, New Jersey, South Carolina, and Virginia. Fast service maintained to all parts of the country. Write today for additional information.

**Columbia MACHINE WORKS**

107 S. GRAND AVE. VANCOUVER, WASH.

## Thousands of New Prospects for YOU

Every month thousands of families plan a new house. Many are in your own market area. Each is a prospect even though you don't know who or where he is.

Portland Cement Association advertising in the leading housing magazines finds these prospects. This advertising:

1. Creates a desire and preference for a concrete masonry house.
2. Brings requests from thousands of people for helpful literature.
3. Urges these people to call on you for more information and help in getting a concrete masonry house.

Help yourself to this great potential of extra business by tying-in with PCA advertising locally and inviting prospects to visit or phone you for assistance. Direct them to architects, builders and lending agencies experienced in designing, building and financing concrete masonry houses.

**PORTLAND CEMENT ASSOCIATION**

**33 West Grand Avenue, Chicago 10, Illinois**

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

# POWERLIFT

Now **truck-man** INCREASES CAPACITY

**FOR REAL BLOCK HANDLING ECONOMY**

Designed especially for and tested in Concrete Products Plants—the new Model DHP Heavy Duty Truck-Man with *Power Lift* is ready to start saving money for you. This new Truck-Man will handle a full 72 block rack with ease. (New rated capacity—4500 lbs.) *Power Lift* eliminates the back-breaking, time consuming task of raising the load—a flick of the wrist and it's on the way. Once load is raised from the floor, TAKE OFF—balance of lift can be made in transit. As much as a minute is saved each trip—more trips per day—more work with less effort. Oh, yes—all the regular Truck-Man advantages of the agile standard models are retained.

**FIVE OTHER VERSATILE MODELS**

**MODEL DH**—4500 lb. Skid Lift with hand pump

**MODEL DFP**—3000 lb. capacity, power lift Pallet Toter.

**MODEL DF**—Pallet Toter with hand pump (3000 lb. capacity).

**MODEL DT**—2000 lb. Platform Utility.

**MODEL DR**—Truc-Tor for cargo trains. Up to 6500 lbs. on dry, level concrete.

**TRUCK-MAN OWNERS**

**Convert your present Truck-Man trucks with the Packaged Power Lift Conversion Unit. New larger diameter lift cylinder and all other parts required by change are included. Easily and quickly installed.**

***Want to reduce your handling costs? Clip and mail this coupon today!***

**truck-man** Div. of The KNICKERBOCKER CO.

571 Liberty Street • Jackson, Mich.

**Sounds good, please send catalog and further information.**

Name_____

Title_____

Address_____

City_____ Zone____ State_____

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the FORNEY *Compression* TESTER

**SELLS PRODUCTS**
**INCREASES PROFITS**

**Nationally Distributed By**

**BERGEN MACHINE & TOOL CO., INC.**
**FRANKLIN AVE., NUTLEY, N.J.**

**FLEMING MANUFACTURING CO., INC.**
**FLEMING AVE., CUBA, MISSOURI**

***Write for Illustrated Folder.***

**FORNEY'S** *Inc.* 203 ELM ST.
NEW CASTLE, PENNSYLVANIA

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**NOW MORE THAN 130** *LICENSED MANUFACTURERS* ***Producing***

Patented
**homeward**
***Concrete* STEPS**

**A Small Investment That Pays Big Dividends**

**Homeward all metal forms are precision built to produce a product that requires no hand finishing.**

**The exclusive franchise for your territory may still be open.**

**For Complete Information Write**
**ROGER F. WILLIAMS, Licensor**
**3420 S. W. 9th St. Des Moines (15), Ia.**

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**INVEST in a sure *Profit* WINNER**

**CARPENTER** Septic Tank Forms and Handling Equipment are "on the target" for making **extra** profits from a premium product. CARPENTER Equipment means **faster** pouring, stripping, resetting. **One man** handles our Delivery Rig. Satisfied customers from coast to coast. Write for details.

**CARPENTER MANUFACTURING CO.**
**Phone 28938 — R.F.D. No. 1, Box 470, Richmond, Virginia**

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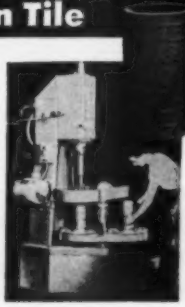
**Make Money with *Champion* Cement Drain Tile**

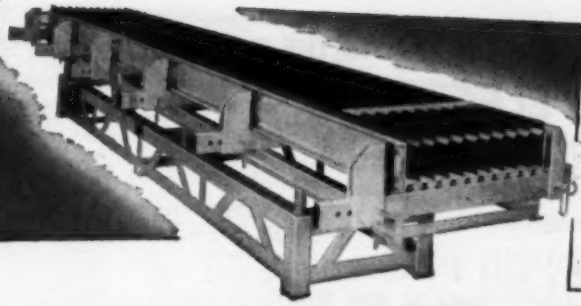


More millions of drain tile are needed to supply ever growing demand. The market is broad and profits are big.

The Champion makes the world's best drain tile. Densely compacted . . . ribbed for extra strength . . . every one truly concentric.

Champion machine is simple, compact and really rugged. Automatic feeder (optional) makes for 1-man operation. Write for literature—gives facts about the business and the equipment.

**Concrete Equipment Co.**
**532 Ottawa Ave., Holland, Mich.**



# . . . ADD A NEW PROFIT-MAKER!

## INCREASE YOUR VOLUME

**Produce money-making concrete joists with the Kirk & Blum Heavy Duty Vibrating Table . . .**

***Only small investment required!***

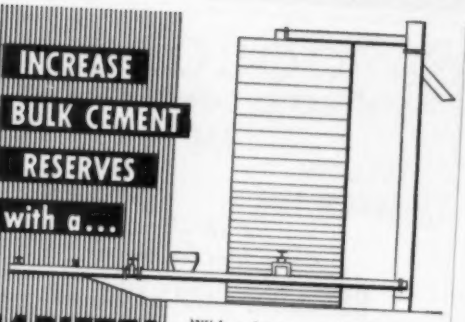
The addition of the Kirk & Blum Vibrating Table to your present equipment requires a very small initial cost, enables you to make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.

Cash in on the ever-growing demand for steel-reinforced concrete joists. Your experience and contacts in the building trade should make it easy to build up a profitable business in this new line. Concrete joists are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.

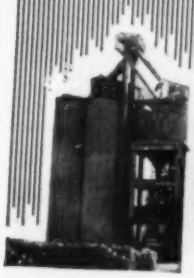
**KIRK AND BLUM**

*Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road.*

**INCREASE BULK CEMENT RESERVES with a...**



**MARIETTA storage system**



With a large capacity MARIETTA storage system, with its multiple silos, you can stockpile bulk cement reserves, avoid shortages and keep your production high. As the sketch shows, MARIETTA concrete stave silos can be used with pneumatic conveyors, or any type of materials handling equipment. These sturdy, fire-resistant tanks give you large capacity, low cost handling, keep your bulk cement in an "always ready-to-use" condition. Write for details on new methods for storing, handling bulk cement.

**The MARIETTA Concrete Corp.**
MARIETTA, OHIO

*BRANCH OFFICES:*
*509 Fifth Ave., New York 17, N. Y.*
*Pulaski Hwy. at Race Rd., Baltimore 21, Md.*
*805 Bessemer Bldg., Pittsburgh 22, Pa.*

**CUT GLOVE COSTS 40% to 70% in concrete products plants**

**for coarse cinder block, bagged cement, other sharp or slippery materials**

**Grab-it gloves,** palm-coated with tough, rough-textured natural rubber, have positive non-slip grip and best resistance to sharp-cutting materials. Outwear ordinary canvas gloves up to 10 times. Choice of knit-wrist, elastic wrist, band top or safety cuff styles.

**for handling most concrete products and greased pallets**

**Monkey-Grip** gloves, coated with permanently flexible plastic, are specially resistant to abrasion and grease. New wing thumb and curved, *pre-flexed* fingers fit the hand all over. Far outwear ordinary plastic gloves. Six fully coated or palm coated styles.

**Free Test Offer:** Employers, send brief description, on business letterhead, of your operation and materials handled. Without charge, we will forward samples of the gloves we recommend, for on-the-job test. Address

**Edmont Manufacturing Company**
**1208 Walnut St., Coshocton, Ohio**
*World's largest maker of coated industrial gloves*

**Edmont**
JOB-FITTED
**GLOVES**

$ FOR $ THE BEST BUY IN THE BLOCK INDUSTRY

# ELECTRO-VISOR

- AUTOMATIC FEED CONTROL..... UNIFORM QUALITY OF PRODUCT
- AUTOMATIC MAINTENANCE..... ELIMINATES THE HUMAN ELEMENT IN MANUFACTURE OF CONCRETE BLOCK
- 960-1200 BLOCKS PER HOUR..... GREATER VOLUME & BIGGER PROFITS FROM YOUR VIBRAPAC BLOCK MACHINE

*WRITE • WIRE • PHONE*

McM ENGINEERING CORP.
1017 W. 23rd Street
Indianapolis 23, Indiana
Phones: Imperial 5496 - 5497

## Discover the Better LOW-COST WAY

to build masonry walls of Enduring Beauty

CUT construction time and costs with custom-designed, butt welded Dur-O-wal. Because of the quality hardness of the steel and manufacturing precision, Dur-O-wal readily falls into place. Stiff, electrically-welded Dur-O-wal eliminates the wasteful inefficiency of unwieldy rods. Dur-O-wal's trussed design incorporates architecture's oldest reinforcing principle . . . provides both vertical and horizontal reinforcing of the highest rating. Avoid substitutes . . . insist on genuine Dur-O-wal for top performance.

• Now available in both lap and butt weld

# DUR-O-WAL

WITH TRUSSED Design

*The backbone of steel for EVERY masonry wall.*

Write plant nearest you

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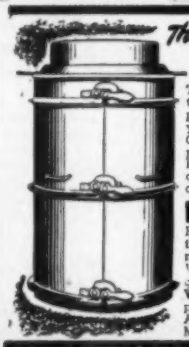
P.O. Box 628
Syracuse 1, New York

Dur-O-wal Div., Dept. 655
Cedar Rapids Block Co.
Cedar Rapids, Iowa



## The "Quinn Standard" FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell and pipe at lowest cost. **WRITE TODAY.** Complete information, prices, and estimates sent on request. Also manufacturers QUINN CONCRETE PIPE MACHINES.

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IOWA

## COLORS

SYNTHETIC CONCENTRATED

RED

YELLOW BLUE
GREEN BROWN

BLACK

*Color Card on Request*

**REICHARD-COULSTON, Inc.**

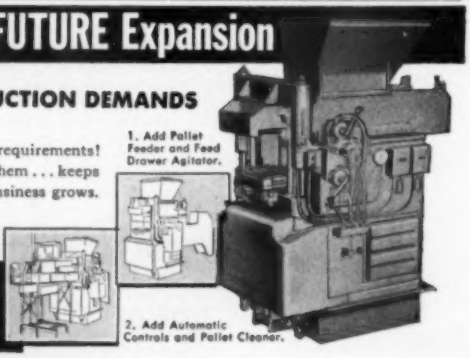
15 E. 26th St., New York 10, N. Y. Factory Bethlehem, Pa.

## Priced for TODAY... Designed for FUTURE Expansion

THE *Columbia* BASIC GROWS WITH PRODUCTION DEMANDS

This low-cost block machine keeps pace with your production requirements! Add the famous Columbia Automatic features as you need them . . . keeps initial investment down but meets production needs as your business grows. Write for complete details today!

Fast Sales, Installation and Maintenance Service to all parts of the country!




Columbia MACHINE WORKS
107 S. GRAND AVENUE, VANCOUVER, WASHINGTON

## SELL MORE BLOCK ON EVERY JOB!

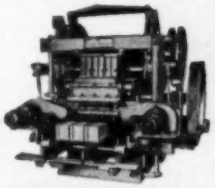
**Furnish VIBRAPAC SOFFIT BLOCK for ALL FLOORS and ROOFS**

Removing Centers from Finished Floor.

Permanent, Fireproof Floors and Roofs. Low initial cost and maintenance. Natural base for radiant heat installations. Provide surface of maximum acoustical and insulation value. Can be plastered, or if left exposed, makes a ceiling of beautiful pattern and texture.

Section of Soffit Block floor showing filler material and bonding with wall.

Soffit Block are supported in place with temporary adjustable steel centers while reinforced concrete slab is placed and cured. This eliminates timber shoring and leaves space below clear during construction.



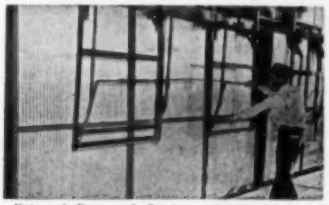
**BESSER VIBRAPAC PRODUCES SOFFIT FLOOR AND ROOF UNITS**

The same machine that produces high quality concrete masonry units in all styles and sizes, using Plain Pallets. Continuous, full capacity operation. Fully automatic. No machine operator required.

**BESSER MANUFACTURING CO.**
ALPENA, MICHIGAN, U. S. A.
*Complete Equipment for Concrete Products Plants*

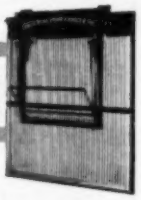
A 5867-¼R2

## BETTER KILN CLOSURES



*Universal Door and Carrier equipment in use at Superior Concrete Products Co., Augusta, Ga.*

● Can help you cut your cost per block and improve your quality-uniformity—by stopping costly losses of heat and steam—and preserving uniform temperature and humidity. Two *very* good reasons for you to investigate



**UNI-TEMP insulated all-metal DOORS* & UNIVERSAL world-famous DOOR CARRIERS**

**Doors also furnished hinge-mounted.*

Let us give you full information about the most efficient kiln closure equipment you've ever seen—at a cost that is probably *much* less then you expect!

Write, wire or phone:
**UNIVERSAL DOOR CARRIER, Inc.**
1117 Cornell Avenue
Indianapolis 2, Indiana

**INTRODUCING THE**

# 12-T MIXER

**NEWEST ADDITION TO A DEPENDABLE LINE OF KELLEY MIXERS**

DISCHARGE SIDE

**Specifications:**
Capacity: 12 cu. ft.
Length: 7'10"
Height: 45"
Width: 36"
Drum Length: 4'6"

CHARGE SIDE

Wittemann Machinery Co., manufacturers of the noted Kelley mixers, does it again! Experience gained in providing the concrete industry with mixers that turn in long, trouble-free dependable performance has been utilized once more in the design and development of the new Kelley 12-T Mixer.

Here is a mixer, smaller in capacity than the other Kelleys*, that turns out amazing production figures every time. From every standpoint—operation, construction, durability, engineering, maintenance and performance—Wittemann has the finest! Get the full facts today. Our descriptive literature will tell you how easily the Kelley 12-T Mixer fits into your picture.

***OTHER MODELS OF KELLEY MIXERS**
Kelley 60-S Mixer . . . 60 cu. ft. capacity
Kelley 30-D Mixer . . . 30 cu. ft. capacity
Kelley 20-T Mixer . . . 20 cu. ft. capacity

**WITTEMANN MACHINERY CO.**
FARMINGDALE • NEW JERSEY

# Everybody Benefits WITH Permalite

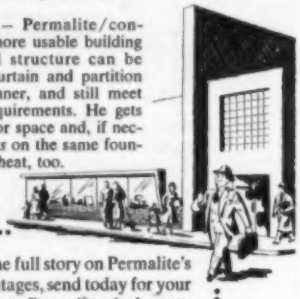
## —AS THE AGGREGATE IN CONCRETE, FOR INSTANCE

**ARCHITECT**— Permalite/concrete takes the handcuffs off the architect with its *light weight*—1/7 to 1/2 the weight of conventional concrete. Freed from this dead load, the architect has greater freedom in designing for required strength with minimum steel requirements.

**BUILDER**— Permalite/concrete takes a lot of weight off the builder's mind, too. *Lighter*, it's easier and quicker to handle, speeds construction. Advantages over other aggregates in the same weight class—uses less water, *shrinks less* on drying, resists thawing and freezing, has *lower absorption*.

**TENANT**— Tenants may not know why, but they're *more comfortable* in a Permalite/concrete building, because of the *added insulation* and *soundproofing* afforded by Permalite/concrete over conventional concrete—quieter offices, more even room temperatures.

**BUILDING OWNER** — Permalite/concrete gives him more usable building space. The steel structure can be lighter and the curtain and partition walls can be thinner, and still meet *fire-resistance* requirements. He gets more rentable floor space and, if necessary, *more floors* on the same foundation. Easier to heat, too.



To get the full story on Permalite's many advantages, send today for your free bulletin on Permalite, the largest-selling perlite aggregate in the world. Write Great Lakes Carbon Corporation, Dept. H-483 —612 So. Flower St., Los Angeles 17.

*Dependable* GREAT LAKES **Permalite**®

THE LARGEST-SELLING PERLITE AGGREGATE IN THE WORLD

PROCESSED FROM SOCORRO PERLITE ONLY BY THESE EXCLUSIVE PERMALITE LICENSEES OF GREAT LAKES CARBON CORPORATION

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| Perlite Products Corp., Dallas, Texas | Pennsylvania Perlite Corp., Allentown, Pennsylvania | McClure & Erickson Corp., Los Angeles, California | New Jersey Perlite Corp., Newark, New Jersey |
| The Whittemore Company, Boxindare 31, Mass. | West Indies Perlite Mfg. Co., Inc., Havana, Cuba | Perma-Rock Products, Inc., Baltimore 30, Maryland | Virginia Perlite Corp., Hopewell, Virginia |


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*See also Detailed Information in 1952 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

# TRANSO'S PERFECTLY MATCHED MIXING-MOVING TEAM

DE LUXE **TRANSOMIXER**
OR
COMPACT **LOAD CHAMPION**

Powerful, faster mixing and smooth discharging are hallmarks of both Transo's mixers — the "Deluxe" Transomixer and the economical LOAD CHAMPION. Both are engineered shorter and lighter than other Mixer-Agitators of equal capacity, allowing a wide choice of light-weight truck chassis. With separate engine or truck engine drive, hundreds of pounds of costly ring gears, sprockets, or bevel gears are eliminated . . . Transo's patented direct drive utilizing a planetary type reduction unit in the Load Champion and universal joint spider in the Transomixer to provide direct coupling of transmission and mixer drum. Better weight distribution, maneuverability, and handling ease result.

Other Load Master Models TL-100—1-1½ yd., TL-120—1½ yd. capacity, 4-wheel-drive.

PLUS

THE MODEL TL-50 ½ YD.
**Load Master**

Transo's fast-operating, short-turning LOAD MASTER practically operates itself at a flick of the finger tips . . . starts, reverses, loads or dumps smoothly and instantly . . . maneuvers and stops "on a dime." Complete elimination of the conventional engine clutch cuts reversing time 75%. The Load Master's planetary type reverse transmission, built integral with the front drive axle, contains a heavy-duty master clutch easily replaceable in 30 minutes! Patented bucket rocking action, 100% operator visibility, and full 72" dumping clearance—28" higher than any other ½ yd. loader—truly put profits back in bulk loading operations.

*Available in 3, 4, 5, 5½, 6 or 6½ yd. capacity, separate engine or truck engine drive.*

Transo's compact Planetary Type Reverse Transmissions make the difference in this perfectly matched Mixing-Moving Team. *Power without deadweight*—key to the dependable economy of each Transo champion—assures around-the-clock stamina and efficiency with full loads. The cushioning effect of spring-loaded clutches running in oil greatly adds to the mobility, handling ease, faster loading, and speedy, shock-free discharging which make the Transomixer, the Load Champion, and the Load Master leaders in their fields.

TRANSO

***BUILT TO MAKE TOUGH JOBS EASY***

**THE TRANSMISSION & GEAR CO.**
10421 HAGGERTY AVE. • DEARBORN, MICH.

**WRITE FOR INFORMATION ON THE TRANSO MIXERS AND THE LOAD MASTER**

*It takes leaders In the Industry such as...*

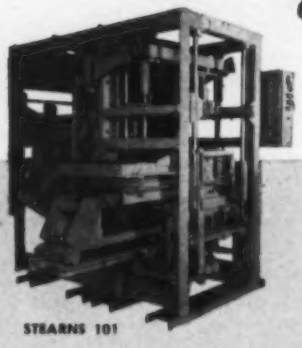
# STEARNS MANUFACTURING COMPANY, INC.

**Producers of the Finest Concrete Block Making Machinery**

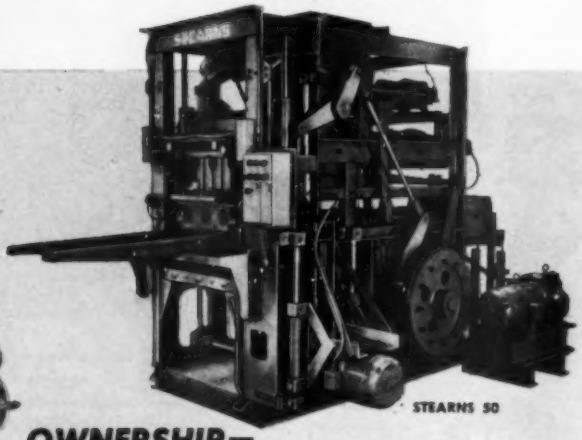
## *To put across*—GREAT SHOWS LIKE THE RECENT CONCRETE INDUSTRIES EXPOSITION

STEARNS 15

**Stearns Manufacturing Company, Inc., takes this opportunity to publicly thank the Management of the great Concrete Industries Exposition January 26-29, 1953, in Cleveland, Ohio, for offering us the means of showing our Concrete Block-Making Machinery *to more vitally interested visitors from all parts of the country than ever before in our history.***



STEARNS 101



STEARNS 50

STEARNS ZIPPER

***OWNERSHIP—THE KEY TO SUCCESS!***

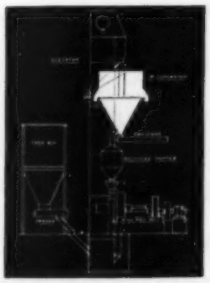
**STEARNS**

MANUFACTURING COMPANY • INC

ADRIAN • MICHIGAN

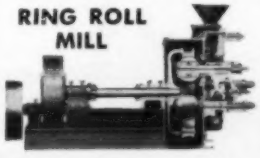
# STURTEVANT AIR SEPARATORS

*Produce Aggregates that meet Government Specifications*



Sturtevant Air Separator in "closed circuit" with pulverizer. This combination increases tonnage and reduces costs in all types of industry.

**RING ROLL MILL**



Range 10 to 200 mesh. Use this mill in closed circuit with Sturtevant Air Separators.

On dam projects throughout the country, Sturtevant Air Separators are helping contractors meet U. S. Corps of Engineers specifications for proper analysis of aggregates. Here's how — Sturtevant Air Separators de-dust and remove the fine fraction according to the mesh required. Dry or damp sand can be handled in any tonnage desired in ranges from 30 mesh and finer to eliminate screen in the production of intermediate sizes.

The de-dusted sand of proper mesh is then inter-blended with the screened sand or aggregates in the proper proportions providing aggregates that meet specifications.
Sturtevant Air Separators are fast and accurate. They increase production of aggregates, cut production costs.
Investigate Sturtevant Air Separators for your jobs. Write for details, today.

**STURTEVANT MILL COMPANY**

**104 CLAYTON STREET, BOSTON 22, MASSACHUSETTS**

*Designers and Manufacturers of:* CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

Here is the ANSWER to your MAGNETIC SEPARATOR JOBS!

**HOMER** "POWER-PLUS" MAGNETIC SEPARATORS

PERMANENT non-electric—*Unaffected by HEAT, COLD or MOISTURE*

CAN BE USED INSIDE OR OUTSIDE PLANT

HOMER MAGNETIC PULLEYS AND PULLEY UNITS—
Available in standard diameters from 12" to 30"; belt widths 4" to 60". Special sizes upon order.

HOMER MAGNETIC DRUMS—
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HOMER MAGNETIC PLATES—
Available in standard widths from 4" to 26"; lengths and number of poles as required. Special fabrications to your specifications.

HOMER PULLEY

HOMER DRUM

*Write for descriptive bulletins*

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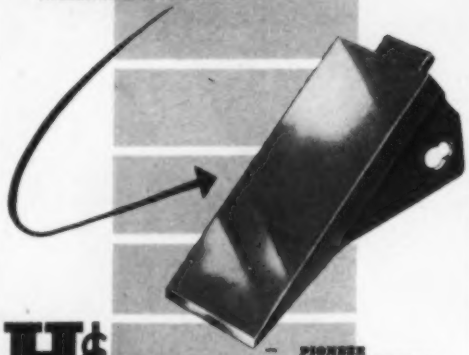
*Teeth that really dig!*

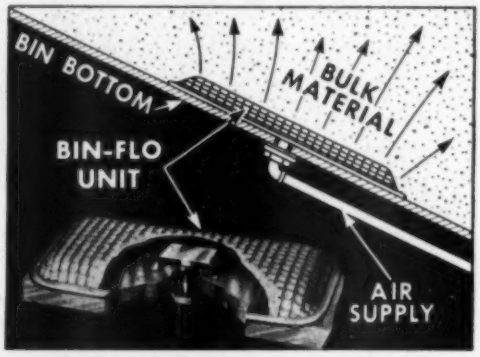
Gives greater yardage at lower cost.
The Tooth with the POSITIVE LOCKING FLEX-PIN Connection.



H&L TOOTH CO.

PIONEER MANUFACTURERS OF TWO-PART TEETH

6440 So. Greenwood Avenue Huntington, California




**BIN-FLO** USES SMALL VOLUME OF AIR AT LOW PRESSURE

KEEPS BULK MATERIALS MOVING

**BIN-FLO** units in bins, chutes, hoppers, etc., restore flow characteristics to dry, finely ground materials which tend to pack or bridge in storage. Types for all materials and conditions. No moving parts; simple installation; negligible operating cost; no maintenance cost.

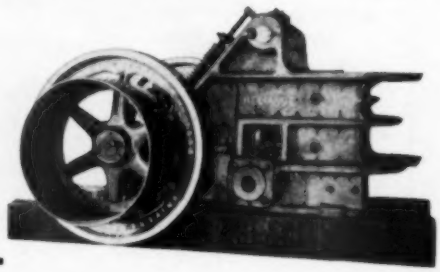
**BIN-DICATOR** bin level indicator—"The Eyes of the Bin"—automatically reports levels of materials in storage; automatically controls filling machines; prevents waste.

NEW 20-PAGE BOOK FREE

THE BIN-DICATOR CO.
13946-T Kercheval • Detroit 15, Mich.

## New Records in Gravel Reduction...RELIANCE Jaw Crusher

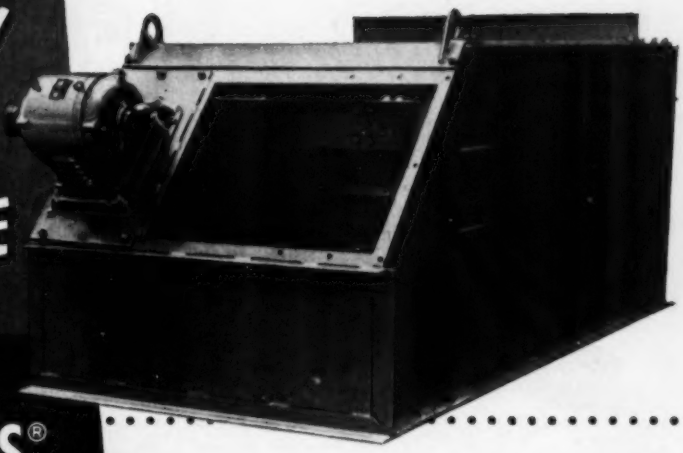
Chalk up top output and profit figures by single pass reduction of gravel with a RELIANCE Jaw Crusher.
RELIANCE Crushers are especially suited for this job—featuring rugged all-steel construction, low and large receiving openings, and long deep jaws for sure gripping and crushing. Jaws adjustable for fine or coarse product.
Fitted with Alemite high-pressure lubrication, smooth-running RELIANCE Jaw Crushers insure long, continuous service life and low-cost maintenance.



***Write for Catalog No. 48, describing the RELIANCE complete line of sand and gravel washing and handling equipment.***

**UNIVERSAL ROAD MACHINERY CO., Kingston, N. Y.**

# FOR HEAVY DUTY SERVICE

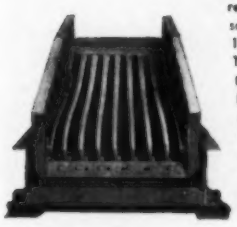


## ...use the SYMONS® ROD GRIZZLY

THE Symons Type K-RG vibrating Rod Grizzly is built for heavy duty service in handling large tonnages of dry, wet, sticky or gummy ores and rock. Here are some of the important features that have been incorporated into the Symons Rod Grizzly:

- *Heavy duty construction throughout . . . built to handle large tonnages under severe operating conditions.*
- *Abrasion resistant spring steel rod screening surface.*
- *Long lasting, low cost rods are easily adjusted or replaced.*
- *Effective, vigorous vibration provides thorough scalping. Amplitude of vibration can be quickly and easily changed to meet various operating conditions.*

This grizzly is ideally suited for service following most sizes of primary crushers and scalping operations requiring separations at ¾" or larger.



The *Symons Bar Grizzly* is recommended for large tonnage scalping where clear spacings of 1½" and larger are permissible. The powerful vibrating action of the Bar Grizzly makes it particularly effective for wet, sticky or gummy materials. The sloping, curved bars of the Symons Bar Grizzly tend to tumble the material as it passes over the screening surface. The tumbling action effectively assists in separating the undersize.

*For full details about the SYMONS ROD GRIZZLY, send for your copy of BULLETIN 207.*

**NORDBERG MFG. CO., Milwaukee, Wisconsin**

S153

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SYMONS GYRATORY CRUSHERS

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MAKE *Belt Splicing*
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for **TROUGH-TYPE**
OR DRIVE & CONVEYOR BELTS

- *QUICKER to Install*
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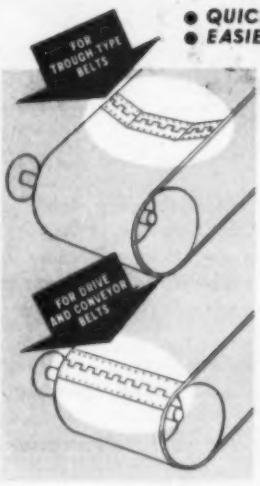


With the Tennefos Belt Splicer, ONE MAN can splice TROUGH-TYPE, flat drive and conveyor belts . . . quickly, easily. No special tools needed for installation — no holes to drill. With a hammer and block of wood, one man can install the belt splicer in MINUTES!

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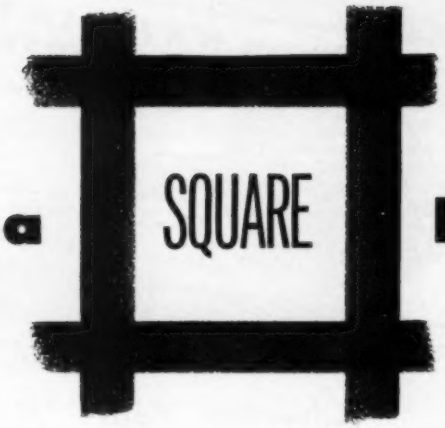
**"Wants" and**

**Surplus Equipment**

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beyond compare!

This close-up of Hendrick Perforated Metal Plate shows no ordinary screen. No other screening medium can equal it for uniformity of mesh, for non-binding clearance and for unparalled long service life.

Flat or corrugated Hendrick Perforated Metal is available in any desired shape and size of perforations in high carbon steel and stainless steels and other commercially rolled metals. Decks can be changed fast and efficiently – cutting time and labor costs.

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Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

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NO QUESTION ABOUT IT, BOYS, THE SHOVEL'S GOT TO GO—THIS JOB COST US MORE 'N WE'LL MAKE AT THE RATE IT'S LOADING THE TRUCKS—WHY, JOE SHOULD OF BEEN AROUND FOR HIS THIRD TRIP BY NOW....
C'MON! YOU THINK I GOT ALL DAY FOR ONE LOAD!!!
WHAT'S THE GOOD (UGH) WORD
ONLY CHAMPION RODS WILL SAVE THE DAY FOR THIS OUTFIT!!!
I TOLD YOU, PK. THIS SHOVEL WAS SHOT... SCRAP IS ALL IT'S GOOD FOR!
REPOINTING BUCKET TEETH WITH CHAMPION WEAR DEVIL A ADDS MONTHS OF EXTRA SERVICE TO THIS EQUIPMENT – ALSO BUCKETS PICK UP MORE EARTH!
ONLY CHAMPION C 30 COULD PUT MORE REVOLUTIONS IN THESE PULLEYS... SMOOTH DEPOSITS WITH NO CRACKS OR CHECKS—
CHAMPION WEAR DEVIL A IS JUST THE ROD TO PUT BACK THE LIFE IN THESE TRACTOR TREADS 'N GEARS -FOR MORE WEAR ALWAYS USE CHAMPION!!
WE DID IT BOYS, ER---I MEAN CHAMPION ELECTRODES PUT THIS SHOVEL BACK INTO OPERATION AGAIN... AND WITH REPAIRS ON THE JOB!!!
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SAFETY LOCKED

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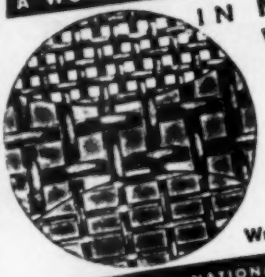

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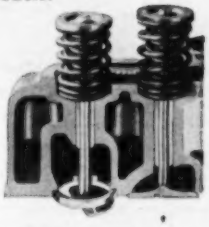
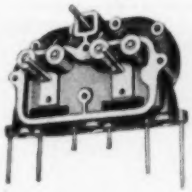
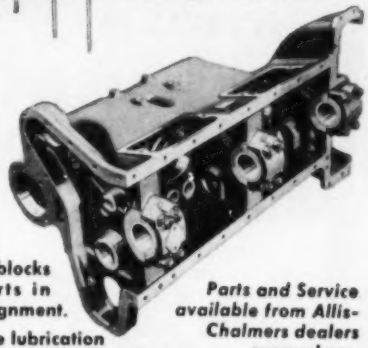
1. Removable cylinder sleeves on all models.

2. Valve-in-head construction.





3. On large engines one interchangeable head to each two cylinders permits one man to make adjustments right on the job.



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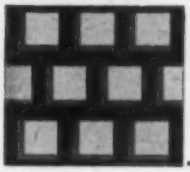

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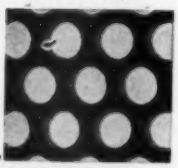

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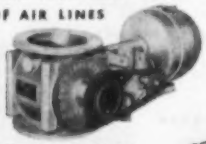

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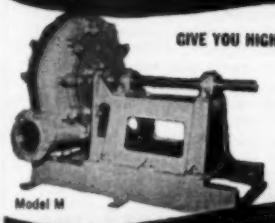

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Lightning Semi-Heavy pumps deliver against 90-ft. heads, pump 9 yds. an hour from 3-in. size. Also 4, 6, 8-in. sizes. Lightnings have the lowest first, replacement and operating costs of any pump built. Write for information.

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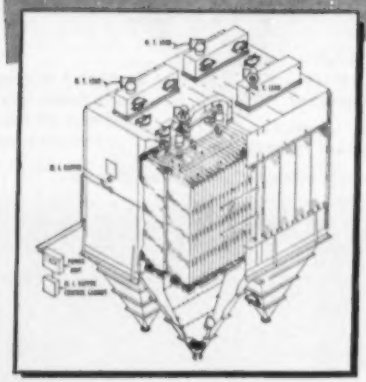
## COTTRELL M-I RAPPER ELIMINATES ALL FOUR...



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1—30 ton Mdl. P Ohio, 50' boom, oil fired, Natl. Board 200# boiler.
1—25 ton Industrial Brownhoist Type G 40-50-60' boom, Natl. Board 150# boiler.

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1—6" Carter "Handiger," direct connected 85 HP Ford V-8 gas eng. Cap. 1500 GPM @ 25' hd.
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***Portable, 2-stage***

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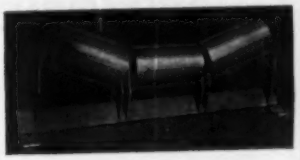

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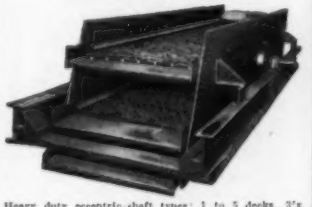

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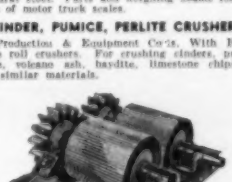

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**BRANDEIS MACHINERY & SUPPLY COMPANY**
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LOUISVILLE Since 1908 KENTUCKY

**CARLYLE**
INDUSTRIAL RUBBER PRODUCTS FOR EVERY PURPOSE

IMMEDIATE DELIVERY OF CONVEYOR, ELEVATOR AND TRANSMISSION BELTING — FIRE, WATER, SUCTION, AIR, STEAM AND OILES AND HOSE

***WHY WAIT***
**We have 8 to 48**
## RUBBER CONVEYOR BELTING

**TOUGH COVERS** — Heavy duty, specially compounded abrasive resistant rubber covers having high tensile strength. Thoroughly capable of withstanding the abrasive action of bulk materials. Properly vulcanized to the carcass to assure utmost performance, economically.

**STRONG CARCASS** — Constructed of finest quality 28 and 32 ounce tough cotton duck, properly treated and impregnated to avoid mildew from moisture and atmospheric conditions. Each ply thoroughly embedded in rubber to prevent ply separation.

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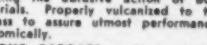

***Avoid delays in your production schedules!***

**We carry in stock for your immediate requirements, Conveyor Belting in widths from 8 inches to 48 inches.**

| Width | Ply | Thickness Top Cover | Thickness Bottom Cover | Type of Duck Carcass |
|---|---|---|---|---|
| 8" | 4 | 1/16" | 1/32" | 28 Oz. |
| 10" | 4 | 1/16" | 1/32" | 28 Oz. |
| 12" | 4 | 1/16" | 1/32" | 28 Oz. |
| 14" | 4 | 1/16" | 1/32" | 28 Oz. |
| 16" | 4 | 1/8" | 1/32" | 28 Oz. |
| 18" | 4 | 1/8" | 1/32" | 28 Oz. |
| 20" | 4 | 1/8" | 1/32" | 28 Oz. |
| 20" | 5 | 1/8" | 1/32" | 28 Oz. |
| 24" | 4 | 1/8" | 1/32" | 28 Oz. |
| 24" | 5 | 1/8" | 1/32" | 28 Oz. |
| 26" | 5 | 1/8" | 1/32" | 28 Oz. |
| 30" | 4 | 1/8" | 1/16" | 32 Oz. |
| 30" | 5 | 1/8" | 1/16" | 32 Oz. |
| 30" | 6 | 1/8" | 1/16" | 32 Oz. |
| 36" | 6 | 1/8" | 1/16" | 32 Oz. |
| 42" | 8 | 1/8" | 1/16" | 32 Oz. |
| 48" | 8 | 1/8" | 1/16" | 32 Oz. |
| 48" | 8 | 1/8" | 1/16" | 32 Oz. |

INQUIRE FOR SIZES NOT LISTED.
ELEVATOR TRANSMISSIONS & V-BELTING ALSO IN STOCK

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Special—New 3' x 14' Pioneer scrubber screen with sand jacket; big discount.

| | | |
|---|---|---|
| Lorain 40 shovel | Morris 10" manganese gravel pump | Butler Carscoop |
| Lorain 40 dragline | Gruendler 10x36 r.b. jaw crusher | Hough HA Payloader |
| Lorain 30 dragline | Cedar Rapids 40x20 roll crusher | 3 yd. Dumpcrete |
| Byers 62 shovel | 20" x 40' portable belt conveyor | 45 ton port. bin |
| P&H 300 dragline | Robins 20" belt tripper | Eagle cinder crusher |

These machines reconditioned in our newly-built daylight plant. Come see them!

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**BELTED:** 255, 328, 470, 1000, 1200 & 1570 Ft.
**ELECTRIC:** 807, 1202, 1722, 2350, 2170 & 3700 Ft.
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**CRANES — DRAGLINES — SHOVELS**
9—Elec. Shovels, 17, 16, 8, 4, 2 & 1 Yd.
6—Walker Draglines, 3-6-8-16 Yd.
5—25 & 40 Ton 120 Ft. Boom Whirleys.
7—Loco. Cranes 20, 25, 30 & 40 Ton Diesel & Steam.
8—Diesel Shovels & Cranes, 1 to 5 Yds.

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46—KOPPEL, 1½ Yd., 24 & 30 & 36 & 42 In. Ga., V Shaped.
115—2 Yd., 3 Yd., 4 Yd., 36 In. Ga.
60—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
6—10 Ton Phoenix Quarry cars-std. ga.

**GRINDING MILLS**
Hardinge 5'x22", 6'x22", 8'x22", 10'x36" & 10'x48".
Ball Mills 6x6, 6x10, 7x6 & 8x6.
Red Mills 4x7, 5x14.
Tube Mills 5x18, 5x22, 5½x20 & 6x22.

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Hercules Junior 3 Roll Mill.
#1 & 3 Raymond Automatic.
B&W and Riley Coal Pulverizers.
#412 Raymond Bowl Mill.

**SEPARATORS & CLASSIFIERS**
5', 8', 14' & 16' Air Separators.
6'x14' Hardinge Counter Current.
Dings Magnetic Type 1R & 2 Stage 60".
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Standard Thickeners—12' to 60' Dia.
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#1 & 2 Wemco Heavy Media Separation Mills.

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60"x35' Ruggles Coles XB Indirect.
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Loomis #1, Keystone 51 & 71.
10—IR—FM2—Wagon Drills.
1—Bucyrus Erie 29T Diesel.

**JAW CRUSHERS**
Blake Type—48x60, 30x36, 24x36, 18x36, 13x30, 12x24, 12x16.
Single Shaft—12x36, 15x36, 15x30, 10x40, 10x30, 10x20.
Cam & Roller—24x40, 14x26, 11x26, 10x20, 6x20.

**GYRATORY FINE REDUCTION CRUSHERS**
Newhouse 7", 10", 14"—Kennedy 198, 238, 378—Sup. McC. 6"—Al. Chal. 322R, 222R, 530R—Traylor TY 36"

**GYRATORY STD. REDUCTION CRUSHERS**
6", 10", 14" & 20" Sup. McC.—Gates Al. Chal. 2, 3, 4, 5, 6, 7½, 8, 12.
Parts for 42" Superior McCully.

**STEEL DERRICKS**
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 30 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

**ASPHALT & OIL TANKS**
15—8000, 10,000 and 20,000 gal. cap. with coils.

**RAILROAD CARS**
100—8000 & 10,000 gal. cap. Tank Cars.
100—50 Ton & 70 Ton Battleship Gondolas.
80—50 Ton Cap. Flat Cars.
10—Side Dump covered, 70 ton Hopper Cars.

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DIESEL: 15, 30, 45, 65 & 100 Ton.
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

**CONVEYOR BELTS**
6000 Ft. 30, 42, 48 & 60 In. Wide.

**SCREENS**
VIBRATING: 3x6, 3x8, 3x5, 4x8, 4x10, 4x12 & 5x12.
HUMMER, NIAGARA & ROBINS, LINK BELT.

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**30 ton Industrial Brownhoist Loco. Crane. 150 HP Climax gas engine. 70' bm. 8 wheel. Double drums. Reconditioned.**

**65 ton Gen. Elec. diesel-elect. switching locomotive. 400 HP Cummins engines. 0-4-4-0. New 1943. Completely rebuilt.**

**1½ yd. Koehring 605 diesel crane, like new. GM 6-71 Diesel. 140' bm. Long tracks. Tagline. 4 yrs. old. Bargain.**

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**GUARANTEED MOTORS**
**M.G. SETS • GENERATORS**
Hoists • Compressors • Transformers
Units of Every Size and Description

**SQUIRREL CAGE MOTORS**
3 Phase, 60 cycle, 220 or 440 volts
(*2200 volts or higher)

| HP | MAKE | TYPE | SPEED |
|---|---|---|---|
| 1750 | *G. E. | K | 3600 |
| 1000 | *G. E. | K634TS | 1800 |
| 750 | *A. C. | TEFC | 1800 |
| 750 | *G. E. | KT | 720 |
| 700 | G. E. | FT | 3600 |
| 500 | *G. E. | PBG | 3600 |
| 500 | *A. C. | 6316SW | 1800 |
| 400 | *Westgh. | CS | 1800 |
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| Size | Make | Type | PSI | Displ |
|---|---|---|---|---|
| 12x11 | Worth. | HB | 100 | 426 |
| 10x11 | Worth. | HB | 100 | 294 |
| 9x9 | Worth. | HB | 100 | 211 |
| 8½x9 | Worth. | HB | 100 | 170 |
| 7x7 | Worth. | HB | 100 | 122 |
| 7½ HP | Worth. | AT833 | 100 | 35 |
| 10 HP | Worth. | AU933 | 100 | 48.8 |

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1329 W. CERMAK ROAD
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**WORTHINGTON ENGINE**

Model DDG, 450 HP, 360 RPM, 5 Cylinders, 4 Cycle, 13¾" bore x 17½" stroke. Under operation only 2 years. Rebuilt and Guaranteed. Gas, Diesel or Dual.

With or without Worthington Duplex Double Acting Pump, 3½" x 18", 2,500# pressure, 72 strokes per min.

**Above units in excellent condition.**

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JAW CRUSHERS—7" x 12" up to 36" x 48".
CRUSHING ROLLS—16" x 10" up to 54" x 24".
GYRATORY CRUSHERS—2 up to 2 12. Also one 14", 16" & 42" Superior McCully gyratory crusher.
SWING HAMMER MILLS.
ROTARY FINE CRUSHERS—#1, #1½ and #2.
DIRECT HEAT ROTARY DRYERS—3' x 25', 4' x 30', 5' x 50', 7½' x 60'.
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1—6' Raymond "Whizzer" Separator.
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RAYMOND MILLS—#0, #00, #1 size.
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AIR SEPARATOR—5', 6', 8', 14' & 16' dia.
1—Complete Lime Hydrating Plant.
1—800-1100 & 1300 bbl. Cement Plant.
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1—Acme #3½A Jaw Crusher, 9x16, 20 HP motor.
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2—Williams #1 Hammer Mills.
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15—15,200 gal. Horiz. Welded Steel Tanks (Virginia).
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47—Vertical Closed Wood Tanks — 3700, 7000, 8000, 8300 and 10,000 gal. sizes. (Ohio).

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24—15 Ton Hopper 36" Ga.
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1—18"x36" Cedar Rapids jaw crusher with grizzly and feeder.
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1—24' Totally enclosed bucket elevator.
1—10x20 Good Roads Jaw crusher.

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CLETRAC Model BD Crawler Tractor
Hercules 4 cyl. Diesel Engine
Hydraulic lift arms W/1 c.y.
Bucket—Bargain.

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4—1946 International K-6 with 2 yard dumpcrete bodies, 825x20 tires, 5 speed transmissions, A-1 mechanically—Price $750.00
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1 complete Sauerman slack line plant, 1 yard capacity.

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Gyratory crushers, 42", 27", 20".
Locomotives, 7 to 80 tons, diesel, gasoline.
Whirley portal gantry cranes, 25-40 tons.
Bucyrus 120B 25 cycle elec. shovel, 4½-yd.
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Shovels, draglines, cranes, 1⅛ to 18 yds.
Bucyrus 2½ yd. shovel att. only, 55B-52B.

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1—40" diameter revolving screen with various sizes extra screen cloth.
1—50 ton hourly capacity sand drag.
1—V16 Pioneer portable screening plant complete with power.

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**¾ YD. SHOVEL**

Byers model 83 shovel, ¾ yd. 6 years old. Powered with Buda gas engine 2 years old.

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ANDERSON DIESEL
2 Cylinder—326 R.P.M.—Type "K" Model 22—No. 5348—60 H.P

FARREL-BACON CRUSHER
Style "A"—18" x 36" Jaw Type.

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75 H.P.—695 R.P.M. Induction Motor No. 13A—Style 129316A—220-440 Volt—3 Phase Ser. No. 1463939.
Also new spare bearings, controls and grids.

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"Jahn" full trailer—12 ton capacity 8' x 10'6"—Tires 7.50 x 20.

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1—15 x 36 Gruendler Jaw Crusher, Like New.
2—101 Galion Diesel Motor Graders, Completely Overhauled.
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2—315 Diesel Compressors, Overhauled, 1 on Rubber, 1 on Steel Wheels.

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Euclid Trucks 15 Ton—22 ton End Dump—15 Yd. and 25 Yd. Bottom Dumps—12—25 Yd. Bottom Dump without tractors.

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Jaw Crushers 36" x 48" Nordberg—36" x 48" Farrel—60" x 48"—42" x 40"—42" x 30"—24" x 36"—18" x 36"—15" x 36" Symons Cone 5½'—4'—3'—2'—50 x 40 Dixie hammer mill—54" Traylor Type T—42" McCully—48" Gyrasphere.

Shovels — Roll Crushers — Rod Mills—Ball Mills — Rotary Kilns — Dryers—Log Washers — Classifiers—Mine Hoists—Transformers—Motors—Gravel Plants—Blast Hole Drills—27T-29T-42T Generator Sets—Drag Lines.
2—25' A.C. Log Washers.

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CRUSHERS: 10x40 & 12x26 Champion, 15x36 Gruendler, 20x36 Cedar Rapids, 24x36 Lippman, 24x50 Champion, 30x42 Univ. 48x36 Farrell & 42x48 Traylor JAW. 22S & 37 Kennedy, 10B, 15B, 16B & 20A Telsmith. 7" & 14" Newhouse, 10" & 14" McCully GYR. 2' Symons CONE.
Model 88B Jr Gravelmaster Crushing, Pioneer Washing PLANTS.
Apron Feeders: 3x6½', 3x8 & 3x10'.
4½x36, 6x56 & 7x60' Rotary DRYERS.
MILLS: Williams 4 & 5, Gruendler 2 & 3XB 22 & 23 Univ Hammer, 6x22 Ball.
Williams Comet 4 roll high side Mill.
10" Dredge Sand Plant, Reasonable.
Draglines: NW25, 6 & 8. Link Belt K370. P&H 455A & 1055LC.
SHOVELS: Bay City 2½, Buckeye 70, NW25 & 6 Lorain L41, Bucyrus 37B, 54B & 86B. Lima 802 & 1201.
H&B PA20 All elec. 2000# Asphalt Plant.
LOCO. CRANE: 20 ton Brownhoist 8 wheel Steam. 45 ton GE. Diesel Elec. Locomotive std. ga.
D13000 & D8800 Caterpillar Power Units.

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**6321 Gannon** **St. Louis 24, Mo.** **Wydown 2626**

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1—20,000# Allis-Chalmers, Dbl Drum
1—26,000# Nordberg, Sgl Drum
1—26,000# Vulcan, Sgl Drum AC with MG Set Complete
1—11,000# Wellman, Sgl Drum AC
1—16,000# Allis-Chalmers, Sgl Drum
1— 7,000# Ottumwa, Sgl Drum AC

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1— 5,000# Jeffrey Carspotter AC
1— 4,000# Brown's Carspotter AC
1— 5,000# Link-Belt Carspotter AC
1—20,000# Amer. Hoist Carspotter AC
1—20,000# LB Endless Puller

**CRUSHERS AND MISC.**

1—36x36 Jeffrey Sgl Roll
1—12x16 Eagle Dbl Roll
1—18-20 Eagle Dbl Roll
1—420' x20" SA Comb. Scraper & Bucket Conveyor or w/o MT'r. Ideal for tipple or dock.
2—24"x60' SA porta. conveyors, AC mt'r
1—(New) NOLAN Porta. feeder
1—22"x44" SD-RS Roots Connersville Positive Pres. Blower output 45 CF per Rev. Complete with 100 hp. AC mt'r and controls
1—3 yd. Sauerman Scraper Bucket System
1—75'x28'x30' high Steel Building

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## $3.50 per M ft.!

**approximately 1/3¢ ft.**

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Signal Corps W 110B 2 conductor, 2 copper, 4 steel, rubber and rugged weatherproof braid wire.

½ mile ..... $ 9.24
1 mile ..... 18.48

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**Comes on no-charge steel reels.**

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..... ½ mile on reel @ $ 9.24 ea.
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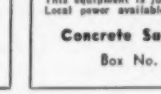

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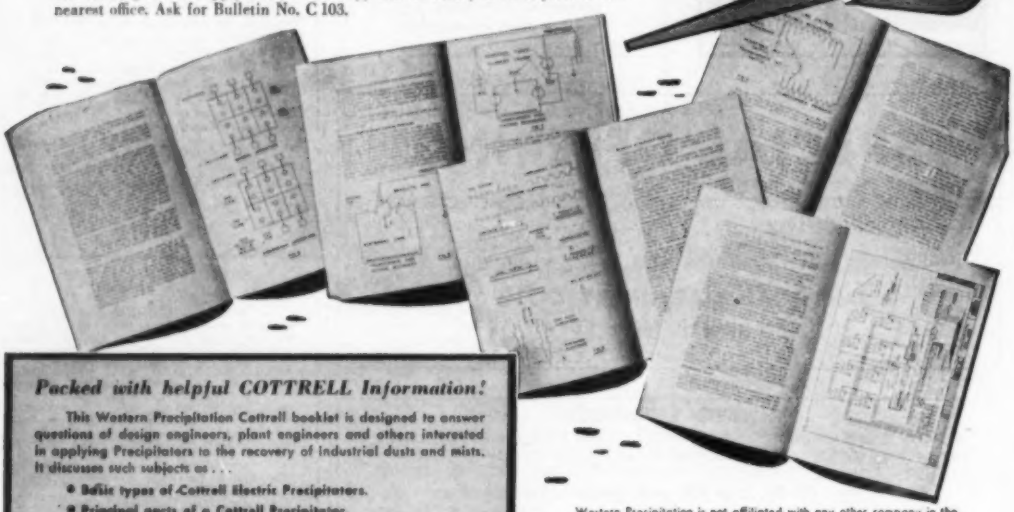

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## *Eliminates Dust Throughout Plant*

***BEFORE***—Dust conditions at the crusher, with Johnson-March System OFF.

***AFTER***—The same operation, at the same speed, with the Johnson-March System ON

This large southern limestone plant*, which produces 3000 tons of limestone a day, had been using a fan and cyclone dust collecting system without much success.

A Johnson-March Dust Control System was then tried—with control of dust at five different sources in the plant. The results were instantly apparent, as is evidenced by the unretouched photographs shown here.

**According to the plant superintendent,** ***"Installation of the Johnson-March System resulted in greatly reduced dust on the belts; the equipment doesn't wear as quickly; and operators have much better working conditions."***

Many similar J-M installations all over the United States are efficiently and economically eliminating dust at such dusty centers as primary crushers, secondary crushers, conveyors, screens, dumping and loading. Installation is fast, simple and inexpensive. Cost averages less than 1/10th that of other systems.

Our engineers will be glad to discuss your dust problems at no obligation. Write today for detailed information.

*Name of plant supplied upon request.

General view of area in plant with the J-M System stopping the dust. Without the J-M System, it was practically impossible to see the nearest objects.

# Johnson March

*Specialists in Dust Control*

**Dept. P.Q.-6, 1724 CHESTNUT STREET** **Philadelphia 3, Pa.**

**WORM GEARING**—universal in its application—affords advantages for almost every power transmission job. Whether you want worm gearing sets or speed reducer units, you will find drives to meet your need in the complete Cleveland line.

Vickers Inc. hydraulic winch in operation on a Piasecki Hup-1 helicopter. Inset at left shows built-in Cleveland worm gearing.

# Small Cleveland gearing speeds sea rescue

CLEVELAND worm gearing now has a part in a new kind of sea rescue. Just after the war, for the first time, a Vickers hydraulically-operated winch mounted on a helicopter hoisted two men to safety when an oil barge ran aground. Now use of the winch is standard practice, replacing hard-to-climb rope ladders previously used.

Vickers Inc. chose Cleveland worm gearing to drive the winch because it is small enough and light enough to satisfy rigid weight and bulk restrictions and is capable of governing efficiently sudden stops and starts and changes of direction involved in rescue work. To date Cleveland worm gearing has participated in over 1700 Korean missions.

Cleveland manufactures worm gearing and worm gear speed reducers in a wide range of types and sizes, large and small, to meet the requirements of any machinery builder or user. Write today for Catalog 400. The Cleveland Worm and Gear Company, 3280 East 80th Street, Cleveland 4, Ohio.

*Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers, Limited.*

**CLEVELAND**
Worm Gear
*Speed Reducers*

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